RAILROAD GAZETTE

FRIDAY, SEPTEMBER 15.

Contributions.

Papers on Painting.—No. 19.

BY CHARLES L. CONDIT.

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WOOD.

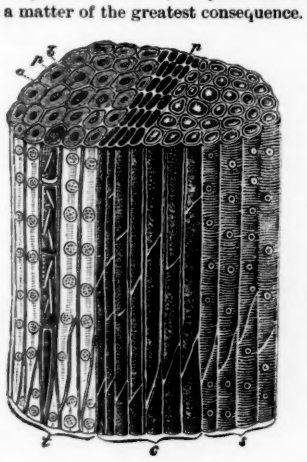
Hartig has estimated the room occupied by green wood to be as follows, per 1,000 parts:

	Fibre-stuff.	Water.	Air
Hard green wood	441	247	312
Soft " "	279	317	404
Evergreen "	270	335	395
Average	330	300	370

A certain amount of water (7 or 8 per cent of all), is included with the fibre-stuff. This shows us that about one-third only of the mass of the wood is solid stuff; the remainder is either water or air space.

When we dry out the water from the wood it shrinks (see tables in Article 5), contracting about $\frac{1}{10}$ per cent. in length and 5 per cent in breadth, or 10 per cent. on the line of yearly rings. As we have already shown, however, this contraction is a matter of no great consequence to the painter except as pulling out into view edges of surface which may not have been painted. The important thing for the painter is to keep out the water after it has once been removed, because if the water gets in again it will (1) expand the wood and crack the paint, with the grain; (2) it will rot the wood under the paint.

If the contraction of the wood is a matter of no great consequence to the painter, however, the presence of moisture in its cells is a matter of the greatest consequence. *Why?*



As is well known, wood is composed of cells like those shown in the accompanying illustration. These cells are made of wood-stuff, which is not a solid mass, but itself composed of minute particles. Water separates these particles from each other and softens the stuff. Only in water-softened wood can the little plants which cause the dry rot get a foothold; they apparently feed on the minute particles of the fibre-stuff which have been softened in water.* Now the union between the particles of wood fibre and of the oil in paint is not a chemical one; there is no linking together, only sticking together of particles. Water does not to any degree affect paint, but it softens the particles of wood and the paint loses its grip on them.

It is the same principle applied to the minute particles of the wood which we work upon when we steam wood in order to bend it.

Steaming wood will not, however, bend it, nor will mere wetting peel off paint; we must have a force. This force is steam generated in the wood by the heat of the sun or other heat rays.

If any one desires to prove these statements, place an end of a painted stick in water, the end surface of course not being covered with paint. After a time make an attempt to peel off the paint at both this wet end and the dry end with a sharp knife. The result will show how much the wood immediately under the paint has softened, and how much the paint has already lost its hold.

A piece of spoke peeled in this way (the paint coming away almost of itself) shows by the ridges on its surface (the surface attached to the wood) what its attachments have been. One needs for the study a good microscope, with a variety of eye-pieces and lenses of considerable power. The lower powers will show long lines of ridges corresponding with the valleys between two fibres. These are strongly marked; much less strongly marked are other very slight ridges crossing the surface of the paint, and corresponding to lines between, or on the short medullary rays (c. c. fig. 2). With more powerful glasses, and looking deeper into the surface of the paint, molds of individual wood cells (fig. 1 c. c.) are seen, and the imprint of their surface. All these lines and ridges tend in one direction (except those corresponding to the medullary rays), and this direction is *with* the grain of the wood. Any strain or movement of particles will, therefore, tend to accumulate on this line, which will open cracks across the grain. The attachment to the paint is to the particles of the wood-stuff, as is shown by the adherence of certain portions after the paint has been soaked off. It is also held fast by being jammed into such valleys as we have described; but since oil contracts in drying, this hold is only occasionally a strong one.

To protect the paint we must protect the wood particles to which it is attached. We can best do this by filling the cells to which the wood holds; a thin oil will soak their surface but it is difficult to fill them. I have accomplished it with varnish, subjecting the surface to very strong heat for many days. The varnish does not then soak loose because the water does not reach the particles on the wood surface, to which the surface of varnish holds.

Priming.—The object of priming is to prevent the surface cells of the wood from being softened by water, or to protect the surface cells of wood *immediately under the paint* from water coming at them from below. For this reason a priming coat should be thin enough to enter *into* the fibre-*stuff*, and surround those particles on the immediate surface. Priming is not a question of wood cells but of wood-cell stuff. A primer must be a thin oil which will physically combine with the wood-cell stuff.

It must not be made thin with turpentine because turpentine evaporates, and we desire an oil which will stay, in order to protect the fibre from water, then raw linseed oil unmixed with anything will serve. A little drier in hasty work is, however, allowable; but it must give a thin oil.

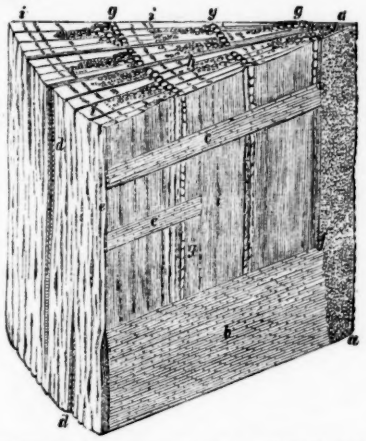
In case the wood is wet we must heat the oil—not hotter than 150°. Linseed oil at 45° of temperature is not so fluid as water, but at 79° it is more fluid. The figures are as follows:

Linseed oil. Temperature.	Degree of fluidity. Water=100.0
45°	84.2
79°	103.4

Or, to put the matter in another way, if linseed oil at 45° temperature requires 104 seconds to flow through a given aperture, it will flow through in 88 seconds, if heated to 79°.

Fillers.

A filler is a necessity of ornament, not a necessity of protection. Its object is to produce and maintain a uniform light-reflecting surface, which will throw white light in a few definite directions. There are two reasons why a filler is necessary.



1. Because wood is composed of a net-work of layers of cells of unequal strength and surface. When the wood is smoothed many cells are cut open, or torn away, and a surface full of a multitude of minute irregularities is left, smooth to the hand, but throwing white light in a multitude of directions—which becomes evident when a light-reflector (varnish) is placed over them.

2. Because wood shrinks into ridges as it continues to dry, the larger cells being thrown into prominence, and the weaker ones giving way here and there.

3. There is, however, a third and excellent reason why as protection wood needs a filler *at exposed butt ends.* Like any other tubes, the wood cells suck up water when their open ends are placed in it. The butt ends of car panels take up water in this way, and split the upper or the lower portions of the panel.

Paint will not easily stay on these butt ends—at least not on some woods; and an experiment of Professor Brewer's, of Yale College, shows the probable reason. In jars of water (occasionally renewed), pieces of wood have been kept for long periods; some for ten years. *At the butt ends* of those pieces hang long veils, or trains of jelly like plants, which evidently live upon the albuminous matter of the sap (and wood substance), which gradually exudes from the end of the fibres.

It is the vapor, so to speak, of this albuminous matter which (probably) rots and destroys paint on the butts of wood, in wheel hubs and the like. Some good filler like stiff white lead should therefore be plastered (with a brush) into the butt ends of panels and hubs.

The effect of leaving the butts of panels uncovered may be observed by standing the end of a plank in water.

For all other purposes than this last, however, wood fillers are merely matters of ornament.

In choosing a filler we need seek only a substance which will give the wood a level surface (permanently), without injuring the oil or paint. This, however, is asking a great deal.

It is probable that no filler has yet been discovered, which, in our climate, will perfectly answer these requirements, except varnish.

Varnish alone is used as a filler by the best piano manufacturers; but they use almost exclusively the darker woods. On lighter woods, so much varnish would probably appear yellow and unsightly out of the sunlight.

In Europe whiting is commonly used as the filler for all fine work, but it will not, I am told, stand in our drier climate, but gives, after a time, a dimpled surface.

Probably the most prominent filler (other than varnish) now used here is the natural silicate, or ground quartz, whose particles are like needles, and stick fast between the layers of fibres.

For coarser work, starch dissolved in turpentine is a good filler, but with time some change takes place which dimples the surface, probably from the starch becoming saturated with the not-drying oil acid.

Shellac dissolved in alcohol is much used, and does better for darker than for lighter woods. There are three objections to it. (1) It yellows with age. (1) Varnish does not so well stick to it as to starch. (3) Water turns it white.

Varnish Filling.—Pianos afford such large unbroken surfaces that the light reflection must be almost perfect in its regularity (as to direction). In some manufactories the wood is first colored with some peculiar substance, which gives it the required shade and uniformity, and at the same time cleanses it of resin and glue (from the other side of the veneer). It is then filled with from three to six coats of cheaper kauri or perhaps manila varnish; afterward scraped to a perfect surface and varnished with rubbing varnish of better "gum" (three coats). This is rubbed down with ground pumice stone on felt cloth, and one or more flowing coats added, and rubbed with pumice stone and rotten stone on felt. The final polishing is with the soft bare hand, a hard, callous hand being unfitted for this work. The final finish is a spare coat of oil put on with great skill, and, often, finally spread by the use of a handkerchief sprayed with alcohol.

One reason why rosewood pianos are apt to scale is the artificial taste of buyers. They demand a uniform and blackish color, which does not belong to the average wood.

A coat of asphaltum varnish is therefore first placed on the wood, and whether it does not adhere, or the resin varnish does not adhere to it, a peculiar scaly appearance is apt to arise with time.

Whiting Filling.—An intelligent French polisher (English recommends a solution of whiting in cold water, adding powdered lime. This results in a mixture of sulphate of lime and pure aluminum. On mahogany and such woods the yellowing of oil is probably no great injury, because the yellow (or rather red) color combines well with the color of the wood. Not so, however, with lighter woods; when these yellow (as some of them do without oil), they take on a sickly cast.

For this reason no other combination of lime than whiting, or a pure sulphate, should be used. Caustic lime, potash, and even common chalk form a soap with oil which quickly turns red, giving the oil a yellow cast and sicklying o'er the wood. Nearly all driers in the varnish have the same effect to a greater or less degree.

Filling Wood.—In filling wood, the painter needs to study the course of the fibres,* in order to leave the filling in the hollows betwen them. He should color the filling darker than the wood, if the wood is to be stained. He should, however, color or stain wood as little as possible. It is hardly honest to use aniline colors for this purpose, because they will certainly fade, and coloring wood is a process once for always. We shall give stains for woods in another place.

In French-polishing, oiling may be done after or before filling in with whiting. French-polishing consists essentially "in the distribution of a solution of lac (shellac) in spirits of wine—by means of a rubber made of cotton, wool and calico rag—over the surface of wood, using pressure until the pores are entirely filled, and the strata of deposited resin adhering forms a smooth, hard and brilliant glaze."

Coaling Locomotives.

The cost of fuel is such an important item on all roads that it would seem that every railroad company would find it to its interest to use the most improved methods of handling coal, so as to be able to keep an accurate account of the fuel consumption of each engine, and also to reduce the cost of handling as much as possible.

Roads running through coal-mining districts have a great advantage in this respect, in being able to take coal direct from mine chutes, thus reducing the cost of handling to a minimum, and as the "dumps" are of a known capacity, the quantity of coal taken by each engine is easily kept. If, however, the mine chutes cannot be used, such roads have no advantage over other lines, and are obliged to take coal from platforms alongside of the track. These vary in size from 10 to 40 ft. in width and 35 to 250 ft. in length and are from 6 in. to 6 ft. in height above the rails. Some of these are covered and have a capacity for storing from 50 to 1,800 tons of coal. They are provided with a crane or derrick placed either in the centre or at one end, as considered most convenient. In some of them the derrick and crane are set upon a second platform of the same height as the tender. Buckets are also provided, having drop bottoms, and holding from 1,000 to 2,000 lbs. All the larger platforms are provided with a narrow-gauge track and truck, on which the

* Cellulose, of which wood, especially the outside of the fibres, is largely composed, is much like starch, from which it is made and into which it can be changed. Cellulose, starch and sugar are all dissolved by water in increasing quantity, sugar being, in fact, the circulating form of cellulose.

* There have been heretofore no good descriptions (in English) nor minute illustrations of the various woods. The very best we have seen, especially the illustrations, are in D. O. A. S.'s articles in the *Coachpainter.* We hope so excellent a microscopist will not forget that there is very much more which the painter needs to know—the detailed reasons for the various grains and varied appearances of various woods, etc.

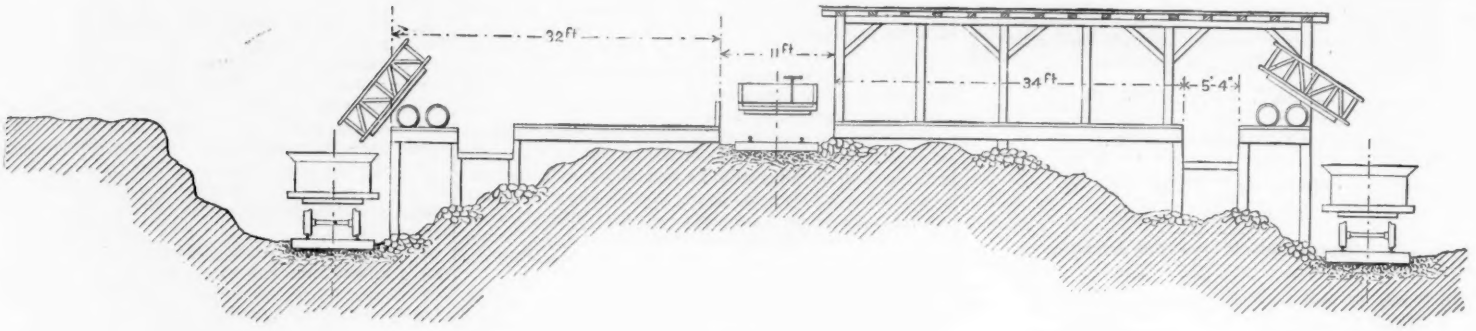


Fig. 1.
COALING PLATFORM AT ALTOONA.

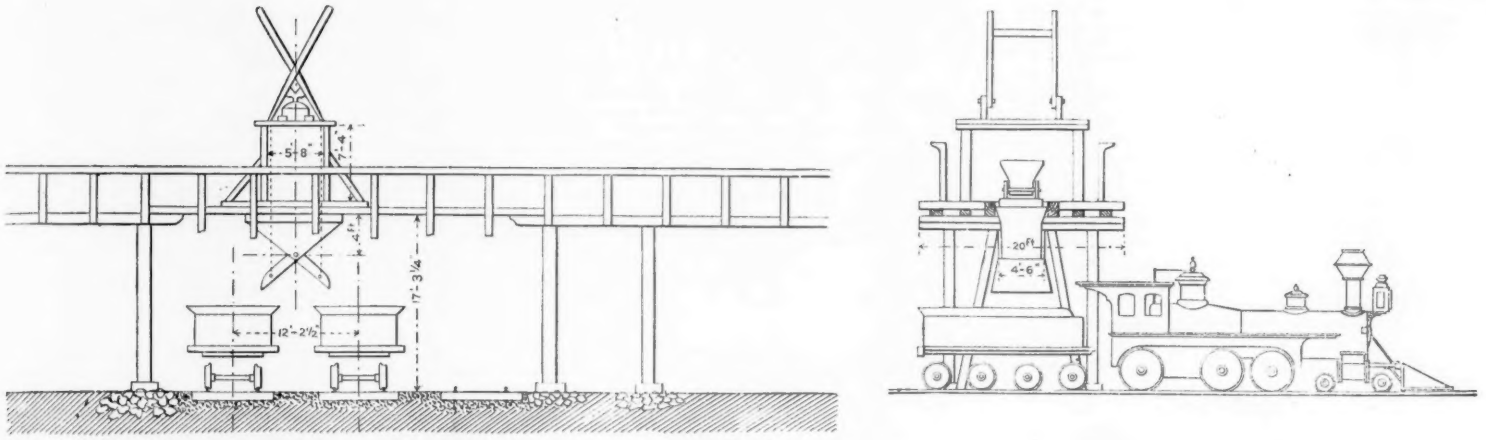


Fig. 2,
COALING CHUTE AT GLEN LOCH.

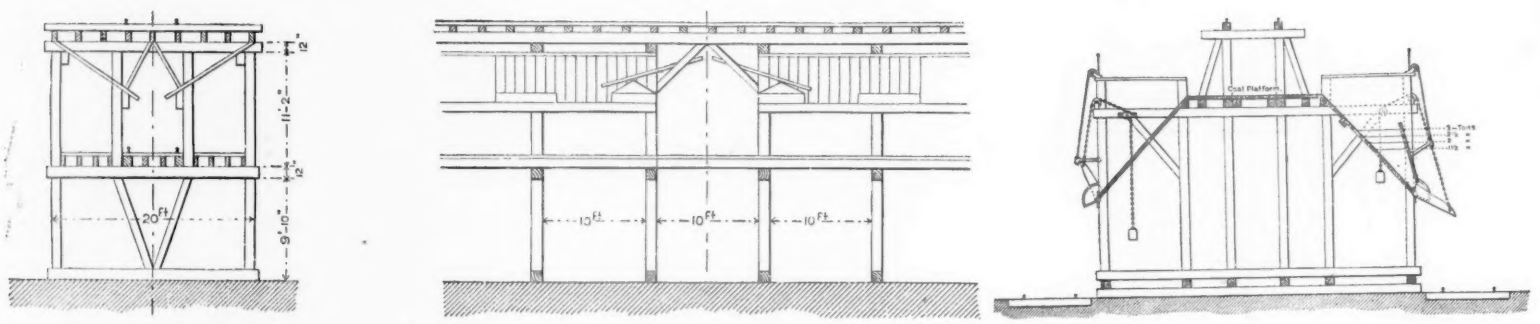


Fig. 3.
COAL POCKETS AT BUFFALO AND CONNELLSVILLE.

Fig. 4
BALTIMORE & OHIO COAL-BINS.

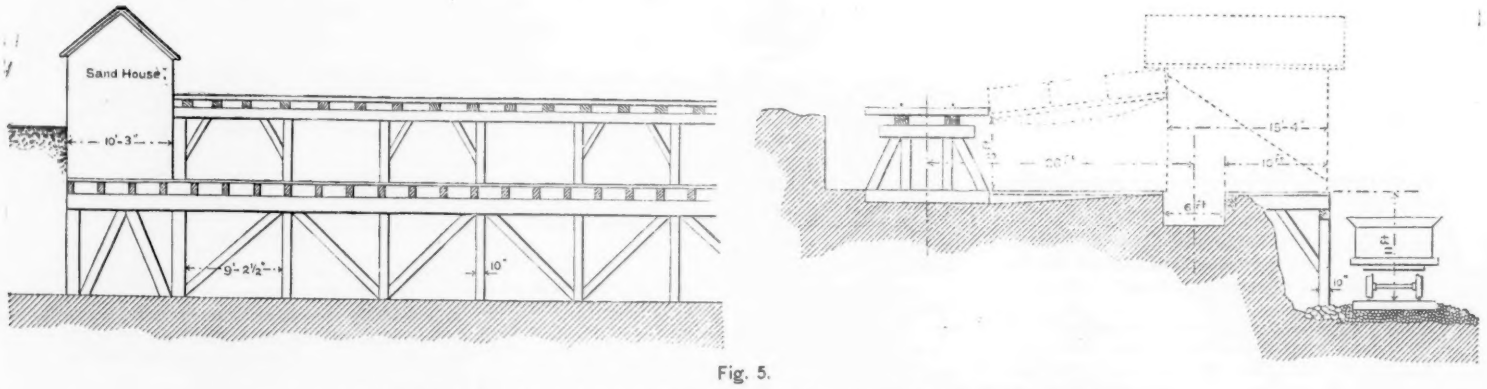


Fig. 5.
COALING PLATFORM FOR PASSENGER ENGINES AT WEST PHILADELPHIA.

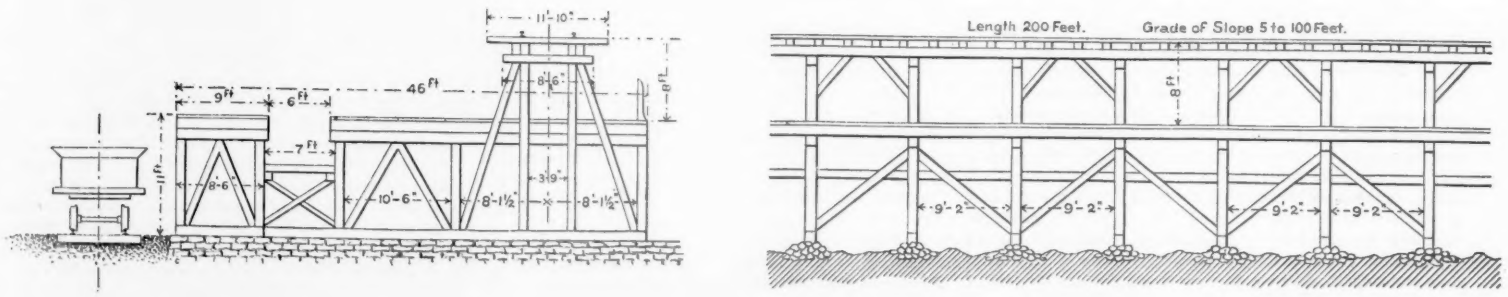


Fig. 6.
COALING PLATFORM AT EAST TYRONE.

buckets are moved to the cranes. The coal is shoveled from the cars to the bins or platforms, and again to the buckets, then pushed to the crane, lifted by it and dumped into the tender. With soft coal so much handling does not improve its condition or increase its value as fuel for road service. A few roads use only a small platform to hold the crane and buckets, and shovel direct from the cars to the buckets; but they only use them for want of yard-room, or at stations where but little coaling is done.

Again, some roads do not use even these, but shovel coal direct from the cars to the tenders, or dump it alongside of the track and from there shovel it to the tender, or to a small platform and then to the tender. The roads entering Cincinnati alongside of the river take coal almost entirely from coal companies' elevators, which are situated alongside of the main line. This is done by dropping an apron and raising a sliding door, which takes only from two to four minutes to coal an engine.

In the *Railroad Gazette* of June 16, of this year, the arrangement used on the Pennsylvania Railroad was illustrated and described.

At Altoona the platform, fig. 1, is some 90 ft. in width and 110 ft. above the rails. Coal is taken from each side, the supply track in this instance being on a level with the platform. One side is covered for storage; each side is provided with a portable scale and narrow-gauge tracks.

At Glen Loch they coal from a mine chute, which is done by building a trestle (fig. 2) over the tracks, and 17 ft. above the same, which is provided with a track for mine dumps, and in the centre of the same and between the two traffic lines, extending some 5 ft. lower than the trestle, is a sheet-iron chute, the bottom of which is covered by aprons, held in place by counterbalances, one for each track. The coal is dumped into the chute from above, and the amount delivered is kept. Coal can be taken from either track by simply dropping one of the aprons on the side desired.

At Buffalo and Connellsville they have what they call "coal pockets" (fig. 3). This arrangement consists of a trestle, 20 ft. in width and 24 ft. in height, divided in two sections, the first being 10 ft. above the rails and containing a track through the centre for the platform dumps. The top section carries a track for receiving the cars, and V-shaped bins on each side of the dump track, the longest slope being from outside toward the centre; the side toward the dump track contains a trap, which, when opened, lets the coal into the dump cars, each bin being of a known capacity. There are no scales with this plan, and there is also little or no shoveling required. With this method coal is dumped direct into pockets, and from these to dumps and then to engine.

At Lewistown, Pa., they use a coaling arrangement* patented by Mr. J. B. Collin, Mechanical Engineer of the Pennsylvania road, in which the engine by its own action, of backing up either way, by an arrangement of pulleys, hoists its own coal. The frame for cage or elevator is about 7 ft. square and 29 ft. high, and is fitted with a chute and apron about 11 ft. above the rails. Back of this and parallel to and 32 ft. from the coaling track is an elevated track 8 ft. in height, for receiving the cars. There is also a track of 5 ft. gauge, for dumps, on the ground, parallel to and about 3 ft. from the elevated; directly back of the elevator frame is a scale and turn-table. When coal is taken direct from the cars, the dump is run under the elevator, and on the 5-ft. gauge. When using storage coal the dump is filled and is run to scales, weighed, and is then taken to the elevator, and is hoisted by the action of locomotive backing. A ¾ chain is used running over pulleys, the one in the centre of the coaling track being 77 ft. 6 in. from the side of the elevator.

The Baltimore & Ohio Railroad has in use coal bins (fig. 4) by which coal can be taken from either side. They are elevated about 35 ft. in height, and are about 42 ft. in width at the base, and of any desired length. On top is a track for receiving cars. On each side, and about 11 or 12 ft. below this, there are platforms about 20 ft. in width, on which the coal is dumped. The bottoms of these are inclined, and commence at the coal platform and end at an outside post which forms the framework for the front, which is 21 ft. from the centre of the trestle and 12 ft. above the rail, the top of the bins being from 10 to 12 ft. in width. Four strips are nailed around inside of the bins, denoting the amount of coal in each bin. When the coal is on a level with the first strip from bottom, the bin contains 1½ tons, at the second 2 tons, at the third 2½ tons, at the fourth 3 tons. The lower end is an apron held up by counterbalance weights when not in use. When coal is taken the apron is dropped and the bin emptied. Each bin is numbered, and the amount of coal in each bin is kept and the engine charged with the amount taken. This method also requires but very little shoveling.

To keep an accurate account of the fuel consumed some arrangements must be used which will enable the coal agent to keep a correct account of all the coal received and all that is delivered to the engines, so that the amount used daily and the quantity on hand can be known at any time. Both should be reported daily to the principal office. With proper arrangements, the expense of keeping such accounts is very small compared with the saving which can be effected.

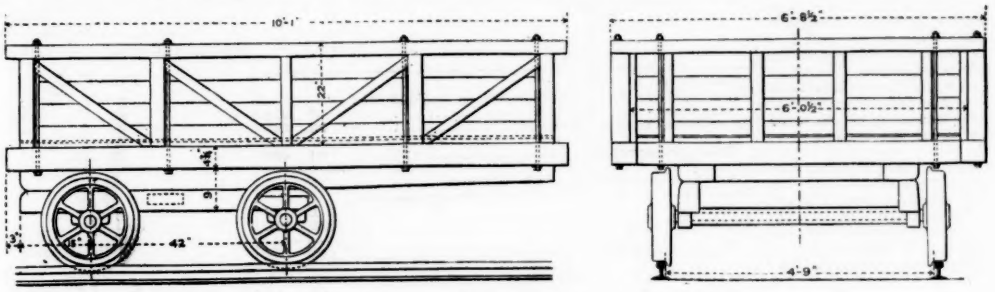


Fig. 7.
DUMP-CAR FOR PLATFORM AT ALTOONA.

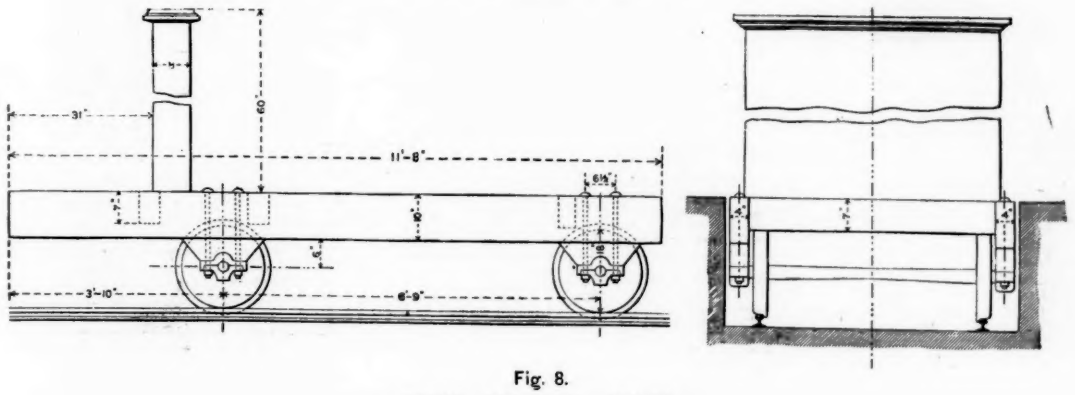


Fig. 8.
FRAME FOR COAL SCALES.

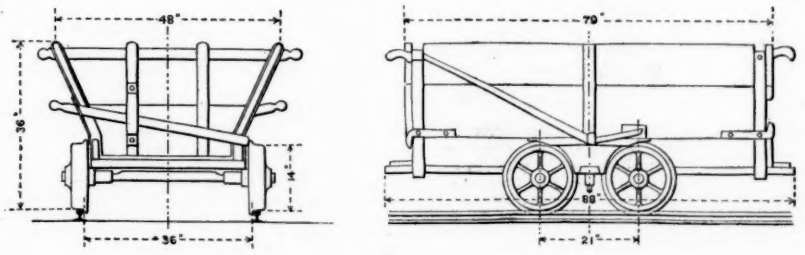


Fig. 9.
DUMP FOR COALING STATION.

* Illustrated in *Railroad Gazette* of June 11.

Railroad Pooling as Viewed by a Railroad Commissioner.

Following are portions of the address delivered at the Iowa State Fair, Sept. 5, by the Hon. James Wilson, Railroad Commissioner:

I have no patience with the fear that Iowa people would render valueless railroad property by hostile legislation. Our people will own the railroads some day, not far distant. Our products went abroad and brought home the national bond. Our products will go abroad and bring home the railroad bond. When our surplus capital can no longer be loaned to farmers, or school districts, or manufacturers, it will seek the railroad security. His imagination must be tame who cannot foresee Iowa people a creditor people. Our school fund will some day be invested in railroad bonds. Trustees will buy them; men will invest in them; bankers will secure with them when the national debt is paid.

ENCOURAGING MANUFACTURES.

There are questions in point to-day that require carefu consideration that might be classed under the head of discrimination. Our several railroads are encouraging manufacturing along their lines by giving low rates on material. These factories compete with like institutions further East that are well established, where money is cheaper, where labor is plentier and cheaper and conditions more favorable. It may be reasonably said that they could not establish themselves without the help of low rates, and of such low rates that the company could not extend to all freight. That the building up of these factories is of great value to the railroads now and prospectively is evident, but should they be assisted in infancy by rates that other shippers cannot have, or would it be best to have charges to all uniform on the same classes of goods, and wait another generation till denser population, cheaper money and labor justified their establishment? I am clear enough on the point that one factory should have the same rate as another for like service, and also that great benefit is coming to the state from the manufactures of raw material now wasting and neglected, but many people would decline to favor manufactures. It is certain that the establishment of canning factories, oatmeal mills, packing houses, creameries, tow mills, tanneries, foundries, corn-syrup factories, sugar-cane factories, woolen mills, implement works, shoe factories, oil mills, flouring mills, paper mills, glass factories, cutlery works, machine shops, barb-wire factories, and the like are gradually solving much of the transportation problem for us, and the railroads are favoring them. No growth in Iowa surprises an inquirer as the growth of our manufactures. It is a fact that discriminations are made in their favor, but the haul is interstate in nearly every instance.

KEEPING OUT OF COURT.

One proposition in all attempted law-making concerning it would have led to failure and disappointment—that is, the attempt to find a remedy for all abuse through the courts. If ever satisfactory relations are established between the railroads and the people, it will be by keeping them out of the courts as much as possible; not because judicial decisions fail to contain correct principles, but because it takes too long and costs too much to reach decisions. Congress operates under a course of rules, most of which are 100 years old. They are the essence of logic, and applicable to every condition of business; but nine-tenths of the business is done by general consent, independent of rules. The rules are used for fighting. This illustrates my meaning concerning keeping railroads and the people out of the courts.

FEDERAL COMMISSIONERS.

Inter-state commerce has grown so great that the diverse interests conducting it cannot agree upon ways of preventing competition. Powers have been instituted representing the great through lines that put on the habiliments of government—executive, legislative and judicial departments. This power frames law, but has no power to enforce it. Division is made of business through pools, but human

nature in some member induces it to break over the agreement. It is thought by the ablest railroad men that federal power must be invoked to compel faith among poolers. When railroads quarrel stockholders get nothing. The organization of a Federal Commission is only a question of time. A Federal Commission will begin its work where the state commissioners stop. It will get facts and should promptly settle disputes, without delay or expense. No appeal should be allowed from its decisions to any court unless the controversy involved large amounts. It should take cognizance of complaints brought to its notice by state commissions. The ablest men in the land should be its members, and their pay should equal the Supreme Court judges' salaries. There is no more reason to doubt the honesty of such a commission than there is to doubt the honesty of the Supreme Court, if the same care is exercised in selecting the commissioner that is used in appointing the judges.

POOLING,

or distribution of business or earnings, is a natural resource to prevent wars among carriers. Pooling officers are created by the companies, and only responsible to them. Harmony among carriers is the object of their creation, and the magnifying of their office the natural growth. They consider the transportation problem from the standpoint of the carrier's interest. That may or may not comprehend the producer and consumer's interest. They become a greater necessity as their knowledge of the details of commerce increases, and suggests to the law-making power the way to remedy the abuses of the carrying business.

Pooling is welcomed by the shipper, because it relieves generally from discrimination. The producer is not of necessity considered by the pool officer, except at the point where production would be interfered with. Pooling is universal where competition would reduce rates, and is a necessity to prevent fluctuations that are ruinous to the merchant. But there is a principle beneath the interests of both merchant and carrier which should be considered in pool making. The rate should be fair to the producer, and his representative should have a say in arranging the pool. Bargains are not fairly made without the consent of all the parties interested.

It is urged by some leading railroad men that the law-making power should only interfere to sanction compacts made between pool officers. This would be well taken if pool officers were infallible and invariably right. The growth of monopolies in oil, and coal, and lumber, and ore, through rebates and special priviliges, show that pooling in inter state commerce needs publicity, regeneration, and reformation.

MINIMUM CHARGES.

When a federal power shall consider what is right regarding controverted questions relating to transportation, minimum charges will be established as well as maximum. The most prominent evil in inter-state commerce, as it operates in Iowa to-day, arises from rates at competing points so low that neighborhood trade is disturbed. The remedy would be to require all rates for like distances to be correspondingly reduced, or the rate to be raised where it is beneath the cost of hauling. But there is no power to interfere in inter-state commerce.

REDUCED COST OF TRANSPORTATION.

The average cost of transportation is being reduced gradually in obedience to influences that are more potent than law-makers. Capital is competing. Intelligence is competing. Our country is becoming wealthy through production. Our country is becoming perfect in itself. Money is kept at home. State and federal expenditures are made at home. This is an age of industrial development. We are all intent on betterment. The people have more money to invest every year. The favorite investment of our people is in railroads. The sea competes to a certain extent, and helps to fix reasonable rates. The lakes exert an influence and help to keep rates down. The rivers carry cheaply and have their influence in moderating rates. Canals help to keep rates low. One system competes with another to some extent. Cutting rates temporarily invites the shipper to seek it permanently. Rates cannot go up easily; the tendency is steadily downward. Every improvement leads to lower rates, because cost is consequently lower. All these influences have combined to bring cost of transportation in Iowa down over 50 per cent. per ton per mile in the last ten years. Butter is carried from Iowa to New York City for $1\frac{1}{10}$ cents per pound. It costs $1\frac{1}{4}$ cents to carry it 100 miles from that city.

Petroleum Fuel for Locomotives.

A correspondent writes to *Engineering* from Russia, giving the following report of experiments made in that country on the use of petroleum as fuel for locomotives:

In your issue of July 14, 1882, I notice a short account of a trial with crude petroleum as fuel for locomotives. Having had some experience with kerosene refuse or petroleum as fuel for locomotives, I take this opportunity of bringing before your notice a brief account of what has been done with petroleum as fuel, for locomotives; more recently on the Grazi Tsaritsin Railway, Southeast Russia.

In 1874, when experiments were first made with petroleum on this road, the main obstacle to its use was its great price, and comparative undevelopment of the appliance then adopted for its combustion. Subsequently every year the petroleum industry in the Caucasus has been increasing, and the price now (1882) demanded for kerosene refuse on the Volga, at our terminus, Tsaritsin, is about half the price commanded in 1874. This, along with the fact that several inventors have come into the field, has induced us to make further experiments with different arrangements recommended.

Only one arrangement has so for been tested, that of Messrs. Balukevitch and Voislaff, engineers, St. Petersburg. (experiments were made March, April, and May this year). On trial with the arrangement as originally designed, the results were anything but favorable; but during three months' continual trial with the apparatus, many alterations were made, and new ideas suggested, and finally we could take trains of 30 loaded cars at ordinary time-table speeds (20 versts per hour) over any part of our main line, the maximum grades being 0.008 or 1 in 125; the trains would be between 380 tons and 450 English tons gross, engine and tender excluded. The consumption per verst with these trains was, with that consumed in lighting up, 1.04 poods, or 41.6 lbs. Russian. The system recommended by Messrs. Balukevitch and Voislaff, although patented in this country, is not new, as on making inquiry a very similar appliance was tried in Woolwich Arsenal, by Mr. Richardson, in 1864.

In our case the main object was to apply the apparatus without making any new holes in the fire-box, consequently the whole was arranged on the original fire-bars; this was not so advantageous; the metallic parts being all cast iron, and composed of a double arrangement of step grate, like a letter V, the steps being about 14 in. broad and having a small ledge on their edges; all round on this was laid a mass of fire-clay balls, from $2\frac{1}{2}$ in. to $3\frac{1}{4}$ in. diameter. It is most important that the balls should be spherical, in order that their points of contact may be as small as possible.

The refuse is laid on the highest step, at both ends of the fire-box, and drops from one step to the other, cascade fashion; no steam is introduced into the fire box, as the refuse petroleum simply runs through the pipes by gravitation, the tank carrying the petroleum being placed not on the floor of the tender, but above the water tank; and should the petroleum be too thick, it is arranged that steam can be introduced through a warm pipe in this tank, the steam ultimately exhausting into the tender.

Experiments with this arrangement are for the present discontinued; further experiments are intended with other appliances.

I omitted to mention that the balls simply fulfilled the functions of regenerator, as the raw flame had to pass through them.

Accidents on British Railroads.

During the first three months of this year, "in the course of public traffic" there were 276 persons killed and 1,183 injured upon the railways of the United Kingdom. Besides these there were 10 persons killed and 1,036 injured from accidents "which occurred upon their premises, but in which the movement of vehicles used exclusively upon railways was not concerned." These accidents are classified as follows in the report:

ACCIDENTS WHICH OCCURRED IN THE COURSE OF PUBLIC TRAFFIC.

	Killed.	Injured.
Passengers:		
From accidents to trains, rolling stock, permanent-way, etc	8	214
By accidents from other causes	25	245
Total passengers	33	459
Servants of companies or contractors:		
From accidents to trains, rolling-stock, permanent-way, etc	1	39
By accidents from other causes	125	615
Total servants of companies, etc	126	654
Persons passing over railways at level crossings	15	3
Trespassers (including suicides)	86	44
Other persons not coming in above classification	16	23
Total trespassers, etc	117	70
Total of all persons killed and injured in course of traffic	276	1,183
Accidents in which the movement of vehicles used exclusively upon railways was not concerned:		
Passengers:		
Ascending or descending steps at stations	1	37
Struck by barrows falling over packages, etc	.....	8
Falling off platform or on platforms	.....	11
Other causes	.....	14
Total passengers	1	70
Servants of companies or contractors:		
Loading, unloading or sheeting waggons	.....	227
Moving or carrying goods in warehouses	1	81
Working cranes or capstans	1	39
Falling off wagon-doors, lamps, bales of goods, etc	.....	51
Falling off, or getting on or off stationary engines or vehicles	.....	109
Falling off platforms, ladders, scaffolds, etc	3	67
Stumbling on line or platforms	.....	73
Attending stationary engines	.....	41
Trampled or kicked by horses	.....	13
Working on line or siding	.....	184
Various other causes	2	51
Transacting business on companies' premises	2	30
Total servants, etc	9	966
Total passengers from all causes	34	529
Total servants, etc	136	1,620
Total trespassers, etc	117	70
Total of all killed and injured	286	2,219

THE SCRAP HEAP.

Prizes for Excellence of Track.

The prizes offered this year to the track supervisors and foremen on the Pittsburgh, Cincinnati & St. Louis road include two of $100 each, two of $80 and six of $50 for supervisors' divisions; three of $50 each, and a number of $25 for the best subdivisions on the various divisions. The inspection will begin on Oct. 23, and continue about a week. The first and second divisions will be inspected by Manager McCrea, the others by the division officers.

The Crouch Compressed Air Buffer.

A trial of the compressed air buffer for cars invented by Wesley Crouch, of Rochester, N. Y., was made Sept. 7, in the presence of a number of railroad officers, and is thus described by the Rochester *Democrat and Chronicle:* "The appliance had been introduced upon two of the large coal cars of the Rochester & Pittsburgh road, and these cars were sent out upon that road and were returned in good shape, loaded each with 18 tons of coal. In the test the large and powerful new Mogul engine, Farmersville, No. 17, was used. The first test consisted in placing a single freight car, arranged with compressed air bumper, off at a distance of 100 yards, with all its brakes set, and backing into it with the other car, pushed behind by the locomotive at a high rate of speed. This test would most certainly have ruined the bumpers upon a car of the Miller style, but in the test, nothing was injured about the compressed air bumper and the shock was very slight. Next the two cars were placed in front of a heavily loaded freight train and the engine attached. In starting and backing the merit of the invention was forcibly shown, for there was nothing of the shock of 'taking up slack,' and of pulling and hauling. The third, and as was thought by the railroad men present the hardest, test was that of the starting of the engine and then suddenly reversing it. The cars were filled by the railroad men, and when this test was repeatedly tried the shock was almost imperceptible."

Fast Time South.

One of the fastest runs ever known on a Georgia railroad was made yesterday from Augusta to Atlanta, the time for the entire distance of 171 miles being 4 hours and 45 minutes. A *Constitution* representative got on the train at Covington, and confesses never to have gone faster. From Conyers to Lithonia, six miles, the time was exactly seven minutes from start to stop. Everybody on the train enjoyed the fast time, nothwithstanding many hats were raised by rising hair. From Lithonia to Stone Mountain, nine miles, the time was 11 minutes. The general average for the whole run was over 35 miles an hour. At least five miles, from Conyers to Lithonia, was made at the rate of 55 miles an hour. When it is considered that 31 stops were made, this remarkable run must have been the fastest ever made in the state, if not in the South.—*Atlanta (Ga.) Constitution, Sept.* 10.

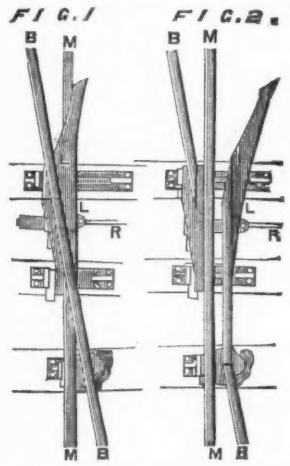
Young Men's Christian Association, Railroad Branch.

The Railroad Branch of the Young Men's Christian Association in Kansas City, Mo., is now established in comfortable rooms, the use of which is given by the Union Depot Co. The rooms are situated on the second floor of the new depot building, and comprise a reading room 35 by 40 ft., which will be used for religious and social meetings, lectures, etc., a parlor 13 by 20 ft., four bath rooms and a wash-room, all of them being well lighted and ventilated and cheerful to a marked degree. They are exceedingly cool in summer, and will be warm and comfortable in winter, being heated by steam. The bath rooms are furnished with hot and cold water and all necessary appliances. Opening religious services were held on Sunday, Aug. 20, which were largely attended. The furnishing is now complete and the formal opening of the rooms will take place on the evening of Tuesday, Sept. 19.

A New Railroad Crossing.

A correspondent of the *English Mechanic* contributes the following description and engraving of a crossing to answer in place of a frog:

"There are many patents in existence relating to improvements in points and crossings, but the inventions have not come into general use. The best of these systems is considered to be the one designed by Mr. Williams, which is now receiving much attention. The diagram shows the Williams crossing. *M* represents the main-line rail, *B* the



branch-line rails, and *L* the moving piece which provides the bearing surface for the wheels of branch trains when crossing the main line. Fig. 1 shows the crossing-piece, *L*, placed in position for a branch train, and fig. 2 shows the piece, *L*, withdrawn, leaving a continuous and unbroken main-line rail. It is claimed for the system that it affords a perfect bearing surface throughout the crossing, and that as the piece, *L*, is moved over the main-line rail any desired degree of super-elevation can be given to the outer rails on curves. The movable piece, *L*, is attached by a rod, *R*, and crank to the ordinary point-rod, therefore the points and crossings are worked together. It may be mentioned that this system has been tried in Scotland, and after a year's working it is officially stated to have fulfilled all that was promised regarding it, and that its use is attracting much interest in railway circles."

Losing His Life to Save Another.

The Pottsville (Pa.) *Miners' Journal* of Sept. 8 says: "A sad accident occurred at White Haven, a couple of days ago, in which John J. Du Boies lost his life. Mr. Du Boies has been engineer doing the local work about White Haven for 15 years on the Lehigh Valley Railroad. His engine has the right of way over all irregular trains between the Tannery and Moosehead. In pursuance of his duty he was called upon about 2 o'clock in the afternoon to make an irregular trip to the Tannery. On the through train from Philadelphia came a young lady who had a ticket for the Tannery. As she was unable to get off at the latter place Mr. Du Boies was directed to carry her back on his engine. The start was made, and just below the lower crossing in White Haven, Engineer Mulligan came along with an irregular train at a speed so great that it was impossible to stop his train and the result was a collision. On Du Boies' engine there were several trainmen, who all escaped. Mr. Du Boies, instead of making an effort to save himself, which he could easily have done, gave his attention to the lady upon his engine. He saved her, but lost his own life in so doing. When the engines came together he was caught between the tank and the fire-box, and was held in this position while the engine was pushed about 200 ft. When they separated he fell upon the track, his back and breast terribly crushed. He was carried to his house and all that willing and loving hands could do to save him was unavailing, and he died at 9 o'clock Saturday night. Mr. Du Boies was one of the most intelligent engineers on the Valley Railroad."

Train Robbery.

A dispatch from Vinita, Ind. Ter., Sept. 12, says: "It appears that the Adams Express agent was informed yesterday that an attempt would be made to rob the express train on the Missouri, Kansas & Texas road, due at Vinita at 10:30 last night. The plan was for two of the robbers to board the train at Vinita quietly, to capture the conductor, and to side track the train four miles north of Vinita, where others of the gang would meet them, and to rob the express, the mail and the passengers, and then ride away on horses provided for the purpose. The express agent telegraphed to J. B. Barrett, the route agent. The latter, accompanied by Detective Irskine, of the St. Louis & San Francisco Railroad, and others, went south on a freight train, met and boarded the train at Choteau, with a view to thwarting the robbers. When the train left Vinita two of the robbers met Conductor Warren on the front platform of the smoking-car. They ordered him to throw up his hands and shot him in the face. Warren fell off the train, and the detectives then opened fire, killing one of the robbers and capturing the other. The train was then backed to Vinita, and the wounded conductor was taken on board. The train then started north again, but was not molested at the place agreed upon, the other members of the gang evidently thinking that something had gone wrong.

"The name of the man who exposed the scheme is Brown. He left the train at Parsons, Kan. The body of the dead

robber was also left at Parsons. Conductor Warren is not dangerously wounded, the ball of the bandit's pistol having only passed through his cheek."

New Lake Steamers.

The two new steamers built for the Flint & Pere Marquette Railroad, to run between Ludington and Milwaukee, are now finished and will leave in a few days to go on their route. Although small, these steamers have been constructed in the strongest manner possible, and are especially adapted for winter navigation. They are heavily sheathed with iron at the water line from stem to stern, and their bows are built so as to ride over and crush down the ice. The forward part is built solid, no space being left between the frames, so as to give more than usual strength. Each steamer has two masts bearing fore-and-aft canvas, which give them a peculiar appearance. Both are painted black up to the rail, the cabins white. The steamers are of the following dimensions: Length of keel, 143 ft.; length over all, 158 ft.; beam, 30 ft.; depth of hold, 12 ft. 6 in. They are propelled by fore-and-aft compound engines with cylinders 21 and 37 by 36, turning a wheel 9 ft. 6 in. in diameter, furnished with steam from a steel boiler 8 ft. 6 in. shell by 16 ft. in length. The machinery is similar to that in the "Algomah," which did such good work in the ice at the Straits of Mackinac last winter. The steamers will carry 500 tons on a draught of about 10 ft. The boilers are on deck, leaving an unobstructed hold for grain. They are arranged with elevator hatches for handling the grain, and have a large capacity for merchandise on the main deck. The passenger cabin is situated on the promenade deck, and is similar to that on all passenger propellers, with sleeping accommodations for 25 passengers besides the crew. Both steamers are built of the best material, and are diagonally strapped with heavy iron. The shortness of these steamers gives them a very top-heavy appearance, especially when light, and they are expected to do some pretty tall rolling on Lake Michigan, but when loaded they look extremely handsome, their two masts and tall smokestacks and black hulls giving them a piratical appearance. They are named the "F. & P. M. No. 1" and "F. & P. M. No. 2."—*Chicago Tribune.*

The Hudson River Tunnel.

Within a little more than a week, two accidents have occurred in the Hudson River tunnel. The first, by far the most serious, because of the greater difficulty of the work, happened on the New York side on the 20th ult. A large caisson was sunk on this side through filling, a layer of gravel, and then it entered a fine sand, the most difficult ground to work in under any circumstances, and particularly so with compressed air, because there was no practical experience to prove that it could be depended on to hold the air pressure. The layer of sand dips away from the tunnel, and will be run through for only a short distance. The exact length is not, we believe, definitely known, as the soundings of the Tunnel Company and the Dock Department differ. The work in this ground presented such dangers that an eminent firm of consulting engineers, then connected with the enterprise, resigned because they failed in convincing Colonel Haskin of the necessity of adopting modifications of his plans. The excavation was started in the usual way of cutting through the timber caisson and putting ring-plates in as rapidly as possible. An inspection of the tunnel when this was begun showed us how closely the sand needed watching. After having thus successfully run his tunnel out with full face for 20 ft., Colonel Haskin put in a brick bulkhead and air-lock, to the existence of which the safe escape of the men during the accident is probably due. While on the New Jersey side, where a pilot tunnel is used, the face is protected by temporary timber bulkheads, the one on the New York side is made up of a number of courses of boiler-plate blocks, bolted together and advanced in sections. The tunnel had advanced 65 ft., and we believe must have been very near the point where it was beyond the bulkhead line. It required a considerable pressure, from 27 to 30 pounds, while on the other hand the sand is much less capable of holding the air than is the silt. The result was an escape of air, a lowering of the pressure, and a rapid influx of water. The arrangements for the safety of the men were much better, so that past experience does not seem to have been entirely lost on Colonel Haskin. We trust that he has now learned that it will not do to attempt to advance a tunnel 20 ft. in diameter through treacherous sand with as light a covering as there is on the New York side.

On the 29th, a "blow-out" occurred in one of the tunnels which have been run for over 1,000 ft. from the New Jersey shore. Here, too, the establishment of air locks near the end of the heading prevented any loss of life. Here the ground is very favorable, comparatively, to Mr. Haskin's system, on account of the range of pressure between the escape of air and that required to convert the silt to a tolerably firm clay.—*Engineering and Mining Journal*, Sept. 2.

A Heavy Locomotive.

Mr. O. Bowker, Engineer of the Autofagasta Railroad, of Chili, in a letter to the *Scientific American*, gives the weight of one of the bank or helping engines, used for overcoming the steep grades on parts of the Santiago & Valparaiso Railroad, as follows: Weight, including water but no coal, engine, 46,742 kilos=103,047 lbs.; tender, 28,387 kilos=62,582 lbs.; total, 165,629 lbs.

A Big Blast.

The Pennsylvania Railroad Co. is vigorously prosecuting the construction of the extension to the West Penn. Division. A large force of men are now engaged in ballasting portions of the road-bed. The pier on the south side of the river at Bolivar for the new bridge has been completed and the masons are at work on other piers. Near Blairsville the road curves around the base of a perpendicular bluff or promontory, known as the "Alum Bank." This bluff is about 200 ft. high, and portions of the shaly sandstone rock, of which it is composed, project over the track of the railway for some distance. These projections have, of course, to be removed, and men are now engaged in drilling holes and blasting off the protruding rock. On Saturday last a blast was discharged which contained 19 kegs, or 475 pounds, of powder. The result of this blast, as might be supposed from such an enormous charge of powder, was the tearing loose of many tons of rock, all of which was deposited on the road-bed beneath. Men were then set to work with hammers to reduce the larger rocks to the proper size for ballasting purposes. Thus prepared the stones are carted along the track to different points and utilized in the formation of a solid road-bed. The contractors expect to have the extension ready for operation before cold weather sets in.—*Pittsburgh Telegraph, Sept* 10.

A Runaway Engine.

Saturday night engine No. 54 on the Michigan Central Railroad started from the yard to go to the junction where she was to switch off and take a freight train laying there to Jackson. The fireman was a green hand who had been in the business but a day or two, and therefore, when he discovered that the engineer had fallen asleep, and that the engine was going right on to Jackson without the train and regardless of all running orders, was at a loss to know exactly what to do. It did not occur to him to awaken the exhausted engineer until No. 54 was about two miles beyond Dearborn, by which time he became very frightened and correspondingly desperate. He dared not touch the lever for fear the boiler would burst, and he would not jump because the exact nature of the soil at his chance landing-place was very uncertain. The only thing about the whole institution that he was acquainted with was the coal shovel, and with this he belabored the exhausted engineer until he awoke to a realizing sense of his duty. Astonished and chagrined at his delinquency the e. e. reversed the engine and took it back as far as Dearborn, where he left the cab and resigned his position to take immediate effect. The Pacific express was delayed 25 minutes by the occurrence, as she dare not leave the depot until the runaway engine had been heard from.—*Detroit Post and Tribune*, Sept. 12.

Attempt at Train Wrecking.

Timothy Toomey, foreman of the section men on the Shawmut Branch of the Old Colony Railroad, found and removed an iron bar and two other pieces of iron which had been placed on the rail at a curve near Mattapan station Sept. 6. The obstructions would probably have caused a serious accident had they not been discovered. Two similar attempts were made recently to wreck trains and the authorities are doing all possible to discover the perpetrators of these acts.

ANNUAL REPORTS.

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Texas & Pacific.

On June 30, 1881, this company owned the Eastern Division, two lines from Texarkana, Tex., to Fort Worth, and a branch from Marshall, Tex., to Shreveport, La., in all 537 miles; the Rio Grande Division, Ft. Worth to Sierra Blanca, 524 miles, and the New Orleans Pacific Division, Shreveport to New Orleans, with branch to Baton Rouge, 336 miles. It leased the use of the Southern Pacific track from Sierra Blanca to El Paso, 92 miles, making 1,489 miles worked.

The following statements are from a report presented by the President at the annual meeting this week; they cover 13 months ending June 30 last, the fiscal year having been changed to end with June instead of May.

The general account, condensed, is as follows:

Stock		$28,127,700.00
Funded debt		34,974,000.00
Scrip redeemable in land, etc		1,138,140.71
Bills and accounts payable		265,287.54
Accounts and balances		34,654.30
Total		$64,846,782.55
Construction	$51,539,539.18	
Securities in treasury	1,141,531.06	
Interest scrip	2,9 3,839.01	
N. O. Pacific stock	6,130,200.00	
" " accounts	281,157.32	
Sundry acounts	250,141.55	
Materials	340,111.61	
Cash	717,231.00	
Income account	1,543,037.82	
		$64,846,782.55

The bonded debt consists of $9,969,000 first-mortgage bonds, Eastern Division; $9,131,000 consolidated bonds, Eastern Division; $13,028,000 first-mortgage bonds, Rio Grande Division; $8,784,000 income and land-grant bonds, Eastern Division, and $62,000 old land bonds.

The assets outside of road and lands were $2,375,773.28; floating liabilities, $395,562.64, showing a surplus of $1,980,210.64.

The report says: "The cumulative interest bearing debt of the Texas & Pacific Railway Company, exclusive of New Orleans Pacific bonds, is $96,198,000, the annual interest charge of which is $1,567,680. In addition it has outstanding an issue of 7 per cent. income and land-grant bonds amounting to $8,784,000, secured by a first-mortgage upon 4,600,000 acres of land, the greater portion of which is located on the line of the Rio Grande Division extending to El Paso.

"The company had at the close of the fiscal year 1,153 miles of road in operation exclusive of the New Orleans Division which had not been fully turned over for operation, and an equipment of 3,559 cars of all descriptions.

"During the year there was completed, fully equipped and put in operation 292 miles of road between Fort Worth and El Paso.

"Average miles operated during the year were 1,025."

The earnings and expenses of the Eastern Division, including all the lines east of Ft. Worth, 537 miles, were as follows for the 13 months:

Earnings ($6.404 per mile)	$3,438,978
Expenses (76.5 per cent.)	2,629,852
Net earnings ($1,507 per mile)	$809,126

The report says: "The annual interest charge on this division is $786,000, or $851,500 for thirteen months. The number of tons of freight transported on this division was 828,378 tons, as against 641,295 tons for the previous year. The total number of passengers carried was 293,753, as against 257,401 the previous year.

"The operations of this division would have shown much better results had it not been for the fact that large quantities of construction material were carried over this division from which a very small revenue was derived; also from the fact that in view of the importance of completing the Rio Grande Division, right of way was given to this material over other traffic. The Rio Grande Division of the road, extending from Fort Worth to El Paso, 616 miles, was completed to a junction with the Southern Pacific on Jan. 1, 1882. At the same time a contract of agreement was made with the Southern Pacific Company establishing a through line from New Orleans and St. Louis to the Pacific coast, and about Feb. 1 following the division, being fully equipped, was open for through traffic. The earnings and expenses for that portion of the Rio Grande Division are therefore only given for the five months, commencing at the time it was opened for through traffic to June 30, 1882, and exhibit the following results:

Earnings (proportions due under traffic contracts estimated)	$848,754
Expenses (63 per cent.)	534,873
Net earnings	$313,881

"When it is considered that the foregoing are the five poorest months of the year for business in Texas, months during which no cotton is moved, and that the road was but newly opened, there can be no reasonable doubt but that the earnings of this division will show a surplus over its fixed charges at the close of the fiscal year.

"There is tributary to this line, and in parts directly adjacent to it, some 3,000,000 acres of very fine agricultural and grazing lands to which emigration is being rapidly drawn.

"The towns established along the line, particularly those of Baird, Abilene and Colorado, are growing with great rapidity, and promise a large and increasing business for the road.

"A statement of the Land Department shows that of the lands granted to the company there have been received and located 5,487,382 acres, of which 4,600,000 acres, covered by the income and land-grant mortgage, remain unsold. The greater portion of these lands are located on the line between Fort Worth and El Paso, and constitute a very valuable property, which is appreciating rapidly in value. They embrace some of the richest agricultural lands to be found in the state. The company has established experimental farms at different points upon these lands to test the agricultural capacity of the country with very satisfactory results. Large tracts of lands in this section have been purchased by Californians for the purpose of growing wheat, and they predict that it will eventually become a great wheat-raising country.

NEW ORLEANS PACIFIC DIVISION.

"By deed dated June, 1881, the Texas & Pacific Railway was consolidated under its own name with the New Orleans Pacific Railway Company. By the terms of this merger the stockholders of the New Orleans Pacific Company received an amount of capital stock of the Texas and Pacific Company equal to that held by them, viz.: 77,200, and the total liabilities of the New Orleans Pacific Company at the date of the consolidation consisted of a first mortgage debt of $20,000 per mile of 6 per cent. bonds. The road thus acquired extends from Shreveport to New Orleans, with a branch to a crossing of the Mississippi River opposite Baton Rouge, in all 336 miles. It passes through the oldest and most thickly settled, and what is considered the finest agricultural, portion of the state of Louisiana, and particularly that section known as the delta of the Red River, which has produced enormous crops of sugar, cotton and corn.

"The terminal facilities of the line at New Orleans are on the most extensive scale and of great value, and they are capable of accommodating the largest business.

"The opening of this connection will establish a through line between New Orleans and the Pacific Coast on the thirty-second parallel of latitude, considered for many years past above all others the most desirable of transcontinental routes; the road also furnishes another all-rail highway between St. Louis and New Orleans. It was expected that this division would be completed and ready for operation by July 1 of the present year, but the unprecedented overflows of the Mississippi caused delays in construction that could not have been provided against. These difficulties have been overcome and arrangements for opening the line by Sept. 15 are now completed."

Ohio Central.

This company owns a line from Toledo, O., to Corning, 184.2 miles, with a branch from Hadley to Columbus, 29.2 miles, and 17 miles of other branches, making 230.3 miles in all. The statements below are from the company's report to the Railroad Commissioner of Ohio for the year ending June 30, 1882.

The traffic for the year was as follows:

Passengers carried	161,505
Passenger-miles	3,608,854
Tons freight carried	733,654
Ton-miles	94,810,596
Av. receipt:	
Per passenger-mile	2,548 cts.
Per ton-mile, gross	0,781 "
" " net	0,297 "

Of the total tonnage 72.2 per cent. was coal and 16.9 per cent. lumber. The coal tonnage for the year was 529,767 tons.

The earnings for the year were as follows:

Earnings ($3,939 per mile)	$907,364
Expenses (61.6 per cent.)	551,293
Net earnings ($1,546 per mile)	$356,071

No proper comparison can be made with the previous year, as the road was fully opened for traffic only eight months of the year.

RAILROAD GAZETTE

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EDITORIAL ANNOUNCEMENTS.

Addresses.—*Business letters should be addressed and drafts made payable to* THE RAILROAD GAZETTE. *Communications for the attention of the Editors should be addressed* EDITOR RAILROAD GAZETTE.

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published*

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

THE SETTLEMENT OF GOVERNMENT LANDS.

The preliminary report of Commissioner of Public Lands for the fiscal year ending with June last gives valuable information of the progress of settlement of the public domain, and especially of the distribution of the settlements—the parts of the new country which are growing most rapidly.

To the railroads of the country, east and west, the progress made in bringing wild land under cultivation, or otherwise utilizing it, is of immense importance. In no way can the enormous additions to our railroad mileage get support—in no way can these new roads avoid disaster to themselves and to many of the older roads—but by an enormous growth in the national industries; and in this country we soon reach a limit to the possible expansion of almost every other industry unless there is a corresponding increase in agriculture. It is not limited by them, because its surplus production is exported; it has the world for a market. They are limited by it, because the sole market for their products is the United States. When they have been extended until they are able to supply the home demand, they can grow no more except as the country grows.

The railroads most interested in the rapid occupation of the government (and other) lands, of course are those along which the land is situated—now chiefly those in Western Minnesota, Dakota and west of the Missouri River. Further east there is still much government land in Wisconsin, Michigan, Arkansas and the Gulf States, but it is mostly timber land, and it is not always bought to make farms of, but often chiefly for the wood that grows on it.

But it need hardly be said that the growth of Minnesota, Dakota, Nebraska and other border states is important not only to the railroads in those states, but almost equally so to those which lead from them to their markets at Chicago, Milwaukee, etc., and again, in a less but still in a high degree, to the roads from these Western markets to the seaboard. Dakota and Kansas cannot grow without increasing the traffic of the trunk lines, as well as that of the Kansas and Dakota railroads.

And in the East it is not the trunk lines alone that profit by the growth of the Far West. Their branches and the net-work of local roads that covers New England and the Middle States, largely or chiefly supported by manufacturing and mining industries, thrive with these industries, and these industries, we have said, can grow only with the growth of the farming industry. We do not think that sufficient consideration is given to this fact. More than anything else, if we would judge of the probable course of business of all kinds in the near future, we should watch the course of agriculture, and ascertain as nearly as may be the area brought under cultivation from year to year.

We cannot ascertain this, it is true, by the report of the disposal of government land. In the first place, comparatively a small portion of the government land is brought under cultivation the year it is obtained, while much of it never is plowed; and, in the second place, probably the larger part of the land brought under cultivation for the first time in any year is land that has been private property for some years. Nevertheless the transactions of the government land offices do have great significance as indications of the progress of settlement, though they are not a measure of the extension of agriculture, the more so as where much government land is disposed of, we may be sure that private land, if there is any, is also sought for.

The number of acres disposed of by the government in each of the last twelve years has been:

Year.	Acres.	Year.	Acres.
1871	5,990,308	1877	3,439,457
1872	6,041,652	1878	7,166,333
1873	5,419,678	1879	8,650,219
1874	5,364,151	1880	9,163,918
1875	3,565,988	1881	10,759,107
1876	4,124,584	1882	15,699,849

No statistics of the progress of the nation that we have seen are so encouraging as these. The enormous transfers of the public lands of late years and the immense increase (46 per cent.) last year, indicate a growth in the farming industry *in the near future* which is likely to serve as a basis for the growth of other industries, and, if it does not increase the prosperity of the railroads, may prevent their suffering by the recent great increase in their number.

The amount of land disposed of by the government, however, is not of itself enough to provide for a very rapid growth in agriculture. The homesteads taken are 80 or 160 acres each, and most of them, doubtless, 160 acres; 120 is probably below the average. At this rate the land disposed of last year, if all farm land, would have made an addition of about 130,000 new farms. As during this year the increase in population must have been as much as 1,800,000 (more than 800,000 immigrants, who are chiefly adults), it is easy to see that there were plenty of occupants for the new land. And probably during the first year of occupation the farmer taking a homestead does not on the average bring more than 30 acres under cultivation, so that the addition to production from the land sold in any one year is not considerable.

But nearly every year the occupier of a new farm breaks up a new piece of wild land, until, in four, six or ten years he is likely to have under cultivation all that he finds it profitable to plow. In most of the prairie country a very considerable portion is left unbroken to serve as pasture and meadow.

Further, a very considerable portion of the government land disposed of is wood land, and this, even when bought for cultivation, is brought under the plow much more slowly than prairie.

But since the revival of railroad building after the bountiful and prosperous crop of 1877, the government has disposed of 51,442,000 acres of land, and most of this is now in new farms, on which the cultivated area is extended yearly, and not on that only which was obtained last year. Further, an immense area of wild land, including most of the fertile land east of the Missouri, except that in Dakota, and also most of that in Kansas and Nebraska, is and long has been the property of individuals or corporations, held for sale or for improvement. We see, for instance, that last year only 15,647 acres of government land were disposed of in Iowa. Yet much more than half the area of that state has never been brought under the plow, and vast areas, especially in the northwestern quarter of the state, have not yet come into the hands of farmers. The government sold little because it has scarcely any land left in the state that any one wants. So in Missouri and Kansas and Nebraska. There is a great deal of good land not yet occupied, but most of it is not government land.

The distribution of the land sales during the last two years we will give by groups of states, as in this we shall see more plainly where the country is growing most.

We take as the first group what we may call the Western border. The number of acres disposed of in the states of this group in each of the four years ending with June have been:

	1882.	1881.	1880.	1879.
Minnesota	1,389,990	1,173,331	852,266	935,788
Dakota	4,568,909	2,673,333	2,268,809	1,657,811
Nebraska	1,345,254	848,198	1,327,038	1,181,682
Kansas	1,559,475	1,299,014	1,524,905	2,784,538
The four	8,863,628	5,993,876	5,973,018	6,559,819
Per cent. of total	56.5	55.7	65.2	75.8

Thus in these four border states, in which railroad construction has been so active for the last three or four years, was more than one-half of the land disposed of in every year, but not nearly so large in proportion of the whole last year as in 1879 and 1880. This is due chiefly to the fact that in the later years there have been large sales in Wisconsin, Michigan and the Southern States, where before the transactions were inconsiderable. But the extension of agriculture is greater in the group above named than would appear from the figures. They are all prairie states. The land taken is nearly all (except in part of Minnesota) taken for cultivation, and it is much more rapidly brought under the plow than the wooded lands in Wisconsin, Michigan and the South. We have in this group, doubtless, by far the larger part of the government land that was made into farms during the years named.

In no other states than these was so much as a million of acres disposed of. They are not only first in the list, but there is a long interval between them and any others.

The increase in this group last year, we see, was chiefly in Dakota, in which was 29 per cent. of all the government land disposed of in the United States. Evidently the country along the hundreds of miles of new road built there within the past three years is being filled up rapidly. The Kansas sales, though larger than the previous year, are 40 per cent. less than in 1879; doubtless because the good government land there is now mostly taken. The increase in Minnesota over 1881 is moderate, doubtless for the same reason. Nebraska gains largely over 1881, but not over previous years. The land now taken there is mostly north of the Platte, which until recently was neglected.

Next in importance, probably, as a field for new settlements on government land, is the Pacific coast. There the acres disposed of were:

	1882.	1881.	1880.	1879.
California	408,701	584,072	362,791	379,921
Oregon	154,337	313,326	240,058	120,443
Washington	359,209	419,237	421,617	245,310
The three	922,247	1,316,635	1,024,466	745,674
Per cent. of total	5.9	12.2	11.2	8.6

In the group as a whole, fewer acres were disposed of last year than in either of the two years previous, and the decrease from 1881 is 30 per cent. The chief movement of population in Oregon and Washington recently has been to the wheat lands on the headwaters of the Columbia, which have been made accessible by the lines of the Oregon Navigation Company and the Northern Pacific. Wheat-growing is said to have been very successful there, and it was natural to expect that the lands fitted for it would be taken up rapidly. The fact that the Northern Pacific owns a vast amount of land there may have something to do with the smaller sales of government lands.

These three states together have a greater area than the four in the western border group, but their land sales are little more than one-tenth as great.

Between these two groups we have a vast territory which contains comparatively little agricultural land, but an immense area of grazing land and mountains, and many valuable mines. What agricultural land there is in valleys, etc., is taken the quicker because there is not much, as it is needed, or soon will be, to supply the wants of the home population of miners and graziers. Railroads have made a great part of this country accessible, but that it is not attractive as a whole to farmers may be judged from the following statement of the acres disposed of:

	1882.	1881.	1880.	1879.
Montana	194,006	109,579	109,069	66,154
Idaho	185,513	149,126	120,322	91,400
Wyoming	61,325	48,955	44,246	33,331
Colorado	609,703	287,642	187,796	110,981
New Mexico	141,298	162,378	38,360	37,338
Arizona	26,598	19,203	17,067	28,209
Nevada	84,580	88,169	31,536	43,410
Utah	143,607	134,394	97,818	103,308
The eight	1,446,630	999,446	647,114	514,124
Per cent. of total	9.2	9.3	7.1	5.9

The sales in the entire group, which has about a third of the area of the whole United States, and contains perhaps twice as much government land as all the rest of the country, were not one-third those in Dakota, less than those in Kansas, and but little more than those in Minnesota or Nebraska. More than two-fifths of them last year were in Colorado, where they may properly be said to have been large, and there the increase over previous years is very large. In Montana and Idaho evidently the coming of the Northern Pacific Railroad has been felt.

It should be remarked that very little land is bought for grazing, and that the occupation of the land in this group for this purpose is not indicated at all by the amount of land disposed of.

East of the Mississippi there are two northern states in which wood land is now much taken by settlers, some of it timber land which has been cut over. Here the acres taken were:

	1882.	1881.	1880.	1879.
Wisconsin	560,585	327,513	167,073	131,335
Michigan	595,828	448,084	250,766	165,630
The two	1,156,413	775,597	417,859	296,965
Per cent. of total	7.4	7.2	4.6	3.4

The extent to which the woods in Northern Wisconsin and Michigan are filling up with settlers of late is remarkable. These are, comparatively, old states,

and for many years there was very little demand for the public lands left in them. The new movement will be of great advantage to the railroads there, giving them a traffic in place of that destroyed by the cutting of the lumber.

On our way to the South we will take Missouri, which does not conveniently come into any of the groups—too old for a border state, and too different in agriculture to be classed with the South. The sales of public lands there have been :

	1882.	1881.	1880.	1879.
Missouri...	297,124	141,355	98,587	40,862

There is a very large increase here, and the sales are considerable, considering that the government cannot have very much agricultural land in that state.

Finally we come to the Southern States (those in which there are public lands). The acres disposed of were :

	1882.	1881.	1880.	1879.
Arkansas....	502,977	526,829	391,566	208,856
Louisiana.....	516,871	145,533	92,080	27,465
Mississippi.....	397,006	153,758	66,287	21,235
Alabama.....	516,514	473,091	350,420	162,773
Florida....	422,396	217,925	95,862	60,845
The five..... ...2,355,764	1,517,136	996,815	481,174	
Per cent. of total..	15.0	14.1	10.9	5.6

All these are old states, but the amount of public lands disposed of there lately and the rapid increase in it from year to year are astonishing. Even compared with 1880–1881, there is an increase of 255 per cent. in Louisiana, of 160 per cent. in Mississippi, and of 94 per cent. in Florida. In the five states together the quantity last year is two and a half times that on the Pacific coast and one and a half times that in the territories. The uncultivated lands in these states is nearly all wooded. In the Gulf States a large part is covered with pine woods, and much of it is very poor. A living can be made on it, however, and probably the freedmen are many of them establishing homes on it, which will not prevent their working for other planters. Most of the land taken in Florida, Louisiana and Mississippi, however, was sold for cash, and not acquired under the homestead law, and the land bought was very likely taken chiefly for lumber or grazing.

Of the entire 15,699,849 acres disposed of, 3,910,212 only were sold for cash ; 6,847,729 acres were entered under the homestead laws, 2,216,244 were "final homesteads," 2,609,797 were entered under the timber culture acts, and 615,866 acres are reported as "miscellaneous."

All taken under the homestead laws and timber culture acts must be taken in small parcels, 80 to 160 acres, and with a pretence at least of cultivation, and really nearly every parcel thus taken becomes the home of a man or a family. Of the land sold for cash we cannot be so certain. Nearly a fifth of the sales were in Dakota, and these were probably chiefly "alternate sections" with railroad land. In Wisconsin and Michigan most of the land was sold for cash; and in these and the Southern States were about 1,595,000 acres of the land sold, while in the four Western "border" states were 1,505,000.

THE LIMIT OF SPEED OF LOCOMOTIVES.

During the last twenty years there has been the usual number, or perhaps more than that proportion, of false prophets in the world. Besides those whose vocation has been confined to sacred matters, and the others who have proclaimed only of profane things, there have been those who have lifted up their voices for years past and told us that we would soon travel by rail at a speed of a hundred miles an hour, if not faster. But the world has waited in vain for the fulfillment of their prophecy. To-day we are traveling no faster than our fathers did twenty-five years ago, and it is a matter of wonder now, as it was then, when a speed of sixty miles an hour is maintained for any considerable time. There must be some reason for this. Why is it that a locomotive can be made to run so fast, but refuses to be urged much faster? It is apparently in vain that the safety valves are screwed down and the steam pressure increased, or the wheels enlarged. Like the speed of a horse when it reaches the traditional 2:40, it is exceeded only by the rare animals.

A person acquainted with the theory and construction of locomotives is apt to reason about this question as follows: It is not an uncommon thing for a thirty-ton engine with 5 ft. wheels to attain and maintain, for a considerable distance, a speed of 50 miles per hour, and pull a train of say six cars. From these data he will argue further, that if the wheels were doubled in size, all the other parts remaining the same and working the same—that is the boiler making the same quantity of steam and the pistons an equal number of strokes—the speed would be doubled and the tractive force halved. In other words, the engine would run a hundred miles an hour and pull three cars instead of four. Alas for this theory! no one has ever run the hundred miles an hour or is likely to soon.

In the language of the immortal Artemus, "Why is this thus?" There must be a fallacy somewhere. Our locomotive and its tender would weigh 100,000 lbs., and each car loaded would weigh 50,000 lbs., so that the weight of the whole train would be 400,000 lbs. Now, be it observed, the load which a locomotive draws is its own weight *and* that of the cars; so that if the tractive power of our engine, when mounted on 10 ft. wheels, is halved, the load it would pull would be only 200,000 lbs., or its own weight and two cars. This is on the assumption that the resistance of the train is the same at 100 miles per hour that it is at 50. Unfortunately for the prophets again, there is a very great divergence of what may be called the line of this assumption and actual facts. It must be admitted, though, that we do not know certainly what the resistance of trains is at high speeds, and, in fact, our knowledge of the resistance at any speed is still very imperfect and inaccurate. It seems to be uncertain even whether the law laid down in most of the text-books that the resistance of the atmosphere increases as the square of the velocity is true. Thus the article on "Gunnery" in the new Encyclopædia Britannica contains the following statement :

> "The resistance of the air to slow movements of, say 10 ft. per second, seems to vary with the first power of the velocity. Above this the ratio increases, and, as in the case of the wind, is usually reckoned to vary with the square of the velocity ; beyond this it increases still further, till at 1,200 ft. per second the resistance is found to vary as the cube of the velocity. The ratio of increase after this point is passed is supposed to diminish again ; but thoroughly satisfactory data for its determination do not exist."

As it is inconceivable that the ratio of resistance of the air, at a certain velocity, changes from the first power to the square, and again, at another velocity, from the square to the cube, the above statement must indicate that the resistance of the atmosphere, at velocities above a certain rate, increases in a more rapid ratio than their square, and below that rate diminishes at a less rate.

It is said again in the article quoted from :

> "In Robins' experiments in 1742 and subsequent years, it became apparent that up to a certain point the resistance of the air increased with an increasing power of the velocity. * * * Experiments with rifled projectiles in 1861 led Professor Hélie to the conclusion that resistance of the air at practical velocities was more nearly proportional to the cube of the velocity than to any other working expression. * * * In 1865 to 1870 Professor Bashforth, at Woolwich and Shoeburyness, found that, velocities and forms being equal and similar, the resistance varies exactly as the square of the diameter of the projectile."

There can be no doubt of the fact, though, that the atmospheric resistance is only a small proportion of the total resistance of a train at slow speed, but a very important element at high speeds. The experiments in gunnery indicate, though, that at high speed it is considerably greater than is ordinarily supposed.

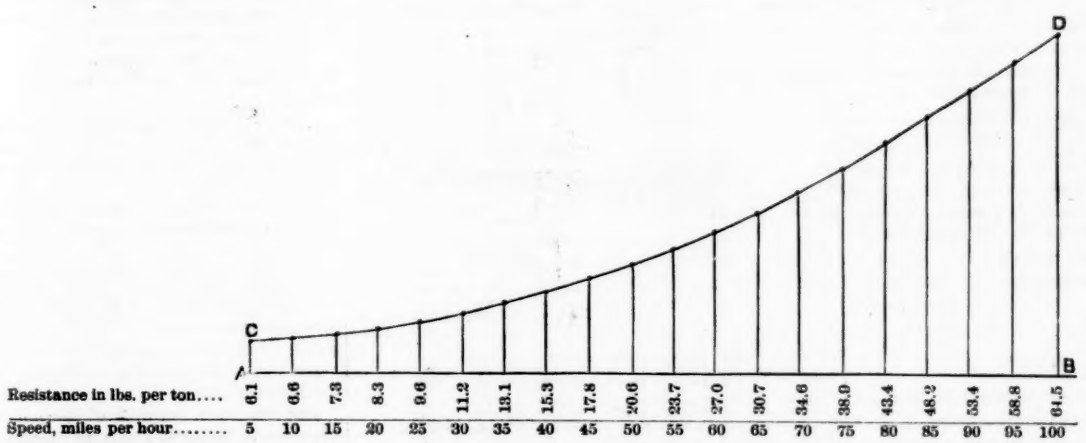
The formula given in Clark's Railway Machinery for calculating the resistance of trains is

$$R = 8 \times \frac{v^2}{171}$$

in which R = resistance in pounds per ton of 2,240 lbs., 8 = the constant resistance at all speeds, v = the velocity in miles per hour, and 171 is a constant deduced from experiments with English trains. There can be no doubt, however, that 8 lbs. per ton is too high for the constant resistance of American cars. Experiments have abundantly proved this. It is also probable that the constant 171 gives too little resistance for American rolling stock at high speeds, owing to the greater surface which they present to the action of the air; therefore, in calculating the table of resistance of railroad trains given in the "Catechism of the Locomotive," the formula used was

$$R = 6 \times \frac{v^2}{171}$$

in which R = the resistance in pounds per ton of 2,000 lbs. This gives somewhat less resistance for the low speeds and greater for the higher ones than Clark's formula. With this formula the resistances for speeds



up to 100 miles per hour have been calculated and plotted in the diagram herewith. The horizontal line AB has been laid off in equal divisions, and from these outside ordinates have been drawn, their length representing the resistance per ton for the corresponding speed, on a scale of $\frac{1}{32}$ in. = 1 lb. Through the ends of these ordinates the curve CD has been drawn, which represents graphically the rate of increase of the resistance. The latter, in pounds per ton, is given besides in figures on each ordinate. This shows how rapidly the calculated resistance increases with the speed. Thus at 70 miles per hour the resistance is 68 per cent. greater than it is at 50. Let it be supposed, further, and this assumption will not be very far from the truth, that our engine with 5 ft. wheels when pulling a train of six cars, at 50 miles per hour, is doing the maximum amount of work, measured in foot-pounds per second, of which it is capable. Fifty miles per hour is equal to 73⅓ feet per minute, so that, taking the resistance of the locomotive and cars to be the same, we have 400,000 lbs. = 200 tons × 20.6 × 73⅓ = 302,133 ft. = lbs. exerted per second. At 85 miles per hour the speed is equal to 124.7 ft. per second. If now we divide 302,133 by 124.7 ft. per second, it will give us the tractive force which the locomotive can exert at that speed, that is, 302,133 ÷ 124.7 = 2,423 lbs. But at 85 miles per hour the resistance of the engine alone, according to our formula, is 50 × 48.2 = 2,410 lbs.; so it will be seen that at that speed the locomotive would only have power enough to draw itself and its tender. If the preceding assumptions are correct, it will be impossible for such an engine to much exceed that speed on a level track. Of course on a descending grade the case would be different. On any ordinary road, with even light grades, the advantage gained by the descent of the one is compensated by the ascent of that which follows. Possibly a 30-ton locomotive with 5 ft. wheels might, on a level road, maintain a somewhat greater speed than 50 miles per hour with a train of six cars weighing 50,000 lbs. each, or it might take more cars at that speed. If so, it would place the limit of speed only a very little higher than that indicated by our calculations. Probably most master mechanics will agree with us that it would require a very good engine of that weight on a road well maintained,

and with light grades and curves, to keep up an average speed of 50 miles per hour, even exclusive of time consumed in stops. If the pistons made the same number of strokes per minute as at 50 miles per hour the wheels would require to be 8 ft. 6 in. in diameter to make a speed of 85 miles. The proportion of tractive power exerted would then be as 5:8½, or $\frac{10}{17}$ what it was before, and the resistance according to our formula, instead of being 20.6 lbs. per ton, would be 48.2. This diminution of tractive power on the one hand and increase of resistance on the other very soon limit the speed of a locomotive of any given size. It may be said, that when the wheels are enlarged the cylinders should be increased in the same proportion. But if this is done the mechanism must all be increased in size and strength, and a larger boiler will be required to supply steam, a larger tender must be carried, and the whole structure must be made heavier, and, therefore, will require more power to pull it.

Of the resistance at the higher speeds we know very little, and that the formula used to calculate it is not correct is shown if we apply it to gunnery and the resistance of shot. Thus the same article, already quoted from, contains a report of experiments to determine the velocity of shot and the pressure in the gun in firing it. With a 12½-in. gun and an 800-lb. projectile, the velocity at the muzzle was 1,409 ft. per second, and the pressure just before the projectile left the gun was 0.6 of a ton per square inch. As the velocity of the shot at the point in the gun at which the pressure was measured was slightly accelerating, we will take 0.5 of a ton, or 1,120 lbs., as the pressure required to maintain a velocity of 1,409 ft. per second, or 960 miles per hour. This pressure was exerted on an area of 122.7 square inches, so that the total amount was 137,424 lbs. This had to be exerted on a projectile weighing 800 lbs. to keep up that velocity. Therefore one weighing a ton would require a pressure in proportion to its weight, or 343,560 lbs., which in other words is the resistance per ton of a shot at a speed of 960 miles per hour. Now let us apply our formula for train resistances to the problem of the projectile. We would then have as the resistance of the latter

$$R = 6 \times \frac{960^2}{171} = 5{,}396,$$

instead of 343,560 lbs. In other words, the formula gives only about one-sixtieth as much resistance as it should. As the projectile has only atmospheric resistance to overcome after it leaves the gun, the above calculation shows that the formula cannot be correct when applied to trains at high speeds, which have *both* atmospheric and frictional resistance to overcome. Probably the formula is approximately correct only for railroad trains at ordinary speeds.

If then, as seems probable, the resistance of trains at high speeds is considerably greater than our present data indicate it to be, that fact will confine us to still lower rates than those indicated as the practical limit of speed of railroad trains.

The fact, too, that twenty-five years ago locomotives ran just as fast as they have since, notwithstanding the improvements which have been made in their manufacture and construction, indicates that there is some physical law which places a limit on the number of miles per hour that we can run.

The conclusion which we draw from these considerations is, that we have very nearly reached the practical limit of speed of trains, unless there is some radical improvement made in the motive power employed. Fifty miles an hour, including stops, is the best time that can be expected for regular trains, and any considerable speed over sixty is probably impossible.

First Railroad in Virginia.

The Chesterfield Railroad Company was chartered by an act of the Legislature of Virginia, approved Feb. 27, 1828, and an act amendatory thereof approved Feb. 25, 1829. These several acts authorized the company created by their provisions to construct and operate a railroad from Falling Creek Coal Pits, in Chesterfield County, to tide-water of the James River, opposite Rocketts, in the city of Richmond, a distance of about 12 miles. By the first act aforesaid the capital was fixed at $100,000, and by the second act increased to $150,000, which last sum paid the whole expense of construction and equipment. The road was completed in the fall of 1831 at that cost.

Previous to the opening of the Chesterfield Railroad coal had been transported to Richmond in wagons at a cost of 8 to 10 cents a bushel. On the opening of the road the charge was reduced to $1.25 and $2.25 per car-load of 75 bushels, according to distance.

Several of the provisions of the charter of the Chesterfield Railroad are unique. It provided that no dividends should exceed 6 per cent., and that any surplus above the amount required to pay such dividend should be applied to the redemption of the capital stock; and that whenever the capital should thus be redeemed no greater amount of charges should be made for transportation than would suffice for the payment of ordinary working expenses and the restricted dividend of 6 per cent. aforesaid; the tariff to be ascertained and fixed from time to time by the State Board of Public Works. In accordance with these provisions the limited dividend was paid annually from the first opening of the road to the final disbandment of the company twenty years afterwards, and by 1844 the last installment of the surplus applied to the redemption of the capital investment had been paid. In the thirteen years intervening between 1831 and 1844 the stockholders had not only received their dividend, but also had their whole capital returned. The dividends paid by the company thereafter were so much income to the stockholders without actual outlay of capital—a kind of retiring pension to the veterans of the railroad age in Virginia.

Such a bonanza, however, could not in the nature of things last many years. In 1851 the Richmond & Danville Railroad was built into the coal-fields; the Chesterfield Railroad became a superfluity, and was ultimately abandoned. No report of the company's doings was made subsequent to that for the half-year ended March 31, 1851.

The results of operating this road—remarkable not only for the curious provisions of its charters, but also as being the first railroad in Virginia—cannot fail to be both instructive and interesting to the later and more progressed railroad men of our common country.

In the following table are shown the tonnage and earnings therefrom; the total earnings; the cost of repairs and working; and the net earnings yearly. In the last column is shown the amount of surplus (above the 6 per cent. dividend), distributed year by year to the stockholders, in redemption of the capital investment:

Fiscal Year.	Coal moved.	Gross Earnings. Tonnage.	Other.	Total.	Repairs and working.	Net earnings.	Progress of redemption.
	Tons.	$	$	$	$	$	$
1831-32	19,876	22,389	1,011	32,400	15,829	7,571	.....
1832-33	37,663	49,112	971	50,083	32,871	17,212	6,000
1833-34	43,802	67,470	1,901	69,371	45,581	23,790	15,000
1834-35	51,829	75,434	1,764	77,188	46,030	31,158	21,000
1835-36	84,976	83,409	1,627	85,036	46,524	38,512	28,50
1836-37	57,622	67, 22	2,007	69,229	41,129	28,100	21,000
1837-38	38,584	51,089	2,420	53,509	35,706	17,803	12,000
1838-39	41,671	51,729	2,171	53,900	34,712	19,188	9,000
1839-40	37,310	50,929	2,318	53,257	37,419	15,838	6,000
1840-41	36,438	51,249	1,595	52,844	32,286	20,558	12,000
1841-42	34,812	40,870	1,272	42,092	29,966	12,126	4,500
1842-43	28 740	35,931	1,827	37,758	25,513	12,245	4,500
1843-44	45,197	47,383	2,957	50,340	32,411	17.929	10,500
1844-45	51,327	44,880	2,101	46,981	38,712	8,269	.....
1845-46	64,164	50,821	1,903	52,724	40,769	11,955	.....
1846-47	54,385	38,840	1,886	40,726	36,639	4,087	.....
1847-48	51,735	37,3:9	1,9 3	39,302	32,169	7,133	.....
1848-49	44,307	39,592	1,665	41,257	25,618	15,639	.....
1849-50	38,435	33,956	2,337	36,293	27,634	8,659	.....
1850-51	25,822	23,230	10,538	33,768	18,072	15,696	.....
Total...	882,695	962,804	46,154	1,008,958	575,590	333,368	150,000
Aver-age...	44,134	48,140	2,307	50,447	33,779	16,668	7,500

The length and cost of this railroad—12 miles and $150,000—were the same throughout. Probably it is the only railroad in the United States, if not in the world, that ever paid its stockholders their principal and full interest meanwhile.

John P. Laird.

The recent death of this mechanical engineer deserves more than a passing notice. Mr. Laird was born at Houston-by-Paisley, Renfrewshire, Scotland, August 13, 1826, and died at Tallahassee, Fla., of inflammation of the brain, July 28, 1882, aged 56 years.

He served an apprenticeship as a machinist in Glasgow, and came to this country at the age of 19 years. His first work was at the Rogers Locomotive Works, Paterson, N. J. From there he went to Ballardvale, Mass., where locomotives were then being built, and in the course of two years came to the Northern Railroad of New Hampshire. After working for a time in the shops at Concord, he ran an engine on the road, and served on this railroad and the Vermont Central until the year 1851. At this early age he was called the best engineer in the service of the latter company.

In company with several others he then went to Michigan and engaged as an engineer on the Michigan Central Railroad. An entry in a diary kept by him in 1852 says:

"Friday, May 21.—Ran the first train into Chicago. Arrived at depot at 9 o'clock p. m., one hour late. Col. Berrian very nervous. Rode on the engine and held me back from the Junction. 'Ferguson' conductor; 18 cars. 'Golden Eagle' handled them finely. Mr. Brooks met us at the depot: quite a demonstration. About 1,000 passengers."

June 1, 1852, he was placed in charge of the shops at Michigan City. He was married just after this, July 21, 1852.

While on a trip East in 1853, called there by the illness of his wife, he was asked to take charge of the shops of A. Latham & Co., at White River Junction, who were about to commence the construction of locomotive engines. This was more in accordance with his training as a machinist, and here he began to carry out his idea of an outside-connected engine.

The third locomotive built at these works and designed by him was called the "Gladiator," and a prominent locomotive-builder of to-day said to the writer a few years ago that this was the first locomotive ever built with outside *level* cylinders and spread truck—the engine that is now universally known as the "American engine." Be that as it may, this engine has had an eventful history, and has shown wonderful vitality, as it is at the present time hauling a passenger train on the Chicago & Northwestern Railway. He remained with this firm as long as it continued in operation.

Among the Western railroads with which he was connected were the Marietta & Cincinnati and the Indianapolis & St. Louis, on both as Master Mechanic.

From the latter road he was called to the Pennsylvania Railroad as Superintendent of Motive Power and Machinery. This was in the early days of the war of the rebellion. It was while on this road that he perfected, patented and brought into use his improvements in railroad machinery, among them the water tubes in the furnace for supporting the brick arch, the diamond stack, etc., and experiments made by him resulted bringing out the well-known Mogul engine. He received, at that time, a complimentary letter from the board of directors for improving the machinery of the road, a letter he appreciated beyond expression. In later years he was Superintendent of the North Missouri Railroad (now a part of the Wabash system). Desiring to see the Pacific coast, he accepted a position on the California & Oregon Railroad, a place he resigned three years after to return to his family in Alton, Illinois, where he had placed it in 1866. Four years ago he became connected (through his friend, Col. C. H. Allen), with the Jacksonville, Pensacola & Mobile Railroad. Through its vicissitudes and changes he has remained in its service with the exception of a few months. The consolidation of this road with the Florida Central found him there as Superintendent, the new company retaining him in the same capacity. His family and friends had been urging him for some time to retire from railroad life, and he had finally decided to do so, but death came and found him still in the harness, and rest came only then.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

Canada Junction.—Track is laid on this road in the United States from East Franklin, Vt., north to the Canada line, 4 miles.

Central Pacific.—This company's *Northern* line is extended from Orland, Cal., north to Corning, 13 miles.

Chesapeake & Ohio.—Extended east to Old Point Comfort, Va., 3 miles.

Connotton Valley.—Track on the *Straitsville Division* is extended from from Navarre, O., south to Justice, 6 miles. Gauge, 3 ft.

Coudersport & Port Allegheny.—Extended eastward to Coudersport, Pa., 3 miles. Gauge, 3 feet.

Denver & Rio Grande.—Track on the *Utah Extension* is extended from Cimarron, Col., west to Uncompahgre River, 22 miles. Gauge, 3 ft.

Des Moines & Ft. Dodge.—Extended from Gilmore, Ia., northwest 16 miles.

East Tennessee, Virginia & Georgia.—Track laid on the *Cincinnati & Georgia* line from Rome, Ga., south to Hill's Creek, 30 miles. Gauge, 5 ft.

Ft. Worth & Denver City.—Extended from Henrietta, Tex., northwest to Wichita Falls, 32 miles.

Kansas City, Springfield & Memphis.—Extended from Seymour, Mo., southeast to Loveland, 11 miles.

Owensboro & Nashville.—Extended from Central, Ky., south to Bevier, 4 miles. Gauge, 5 ft.

Pensacola & Atlantic.—Extended eastward to Shoal River, Fla., 19 miles. Gauge, 5 ft.

Rochester & Pittsburgh.—Extended from Bradford, Pa. south 6 miles.

Texas & St. Louis.—Track on the *Arkansas Division* is extended southwest to Camden, Ark., 47 miles. Gauge, 3 ft.

Tioga.—Extended from Arnot, Pa., southwest to Morris, 12 miles.

Toledo, Cincinnati & St Louis.—Extended from Charleston, Ill., southwest to Stewardson, 29 miles. Gauge, 3 ft.

Wisconsin Central—On the *Milwaukee Extension* track is laid from Neenah, Wis., south to Oshkosh, 15 miles.

This is a total of 272 miles of new railroad, making 6,940 miles thus far this year, against 4,235 miles reported at the corresponding time in 1881, 3,288 miles in 1880, 1,863 miles in 1879, 1,273 miles in 1878, 1,223 miles in 1877, 1,556 miles in 1876, 746 miles in 1875, 1,022 miles in 1874, 2,507 miles in 1873 and 4,623 miles in 1872.

Chicago Rail Shipments Eastward in the month of August, for four successive years, have been:

	1879.	1880.	1881.	1882
Tons	162,263	169,314	260,608	131,875

This year the shipments were little more than half as great as last year (the rates being generally twice as great), and they were also 26 per cent. less than in 1880 (when the rate was about a fifth higher), and 18¾ per cent. less than in 1879, when the rate was very low at the beginning of the month, but was advanced before its close, and averaged probably considerably less than this year.

The August shipments this year, though so much less than in previous years, were much larger than in May, June and July of this year.

From the eight months ending with August, the shipments from Chicago eastward to or beyond Buffalo, Pittsburgh and other western termini of the Eastern trunk lines have been:

	1879.	1880.	1881.	1882.
January.....	192,512	163,378	263,872	321,166
February.	198,541	166,541	204,331	225,816
March..... .	258,458	318,983	212,021	179,145
April	298,042	186,543	275,417	138,475
May.	280,355	125,157	171,432	115,322
June.....	260.234	223.977	242.463	115,805
July.....	145,788	160,187	259,253	95,9 9
August.....	162,263	169.314	260,608	131,875
Eight months.	1,796,193	1,514,080	1,889,397	1,322,643

Thus the August shipments were 38¾ per cent. more than in July—a greater increase than there has been before, and due entirely, doubtless, to the forwarding of the new crop of

grain, which is less felt at Chicago *in August* than at some other places, and is especially less felt by the Chicago railroads than by those further south, because a large part of the grain coming to Chicago is shipped thence by lake and not by rail.

The earnings from the shipments in August must have been about the same this year as last, the rate being about twice as high this year, but they were nearly 35 per cent. less than in 1880. It is questionable, however, whether there has ever been any August except that of 1880 where the earnings from the Chicago shipments were larger than this year. The profits, certainly, should have been considerably larger this year than last, as the cost of carrying is less for 130,000 than for 260,000 tons.

August may properly be considered the beginning of the crop year for Chicago, but it will not be till October that it will get the full benefit of the new crop of small grain.

For the eight months ending with August the shipments were no less than 566,754 tons (30 per cent.) less than last year; and yet down to the end of March the shipments were larger this year than last, the rates having been extraordinarily low this year. We are comparing now with a period last year when rates were but about half as much as at present; yet the decrease in August is not greater than in April and June, though in these latter months rates were as high last year as this.

For the ten days ending Aug. 31 the total Chicago shipments this year were 56,877 tons. This cannot be compared with the movement in previous years, as then the reports were for even weeks. For this period, however, the shipments were at the average rate of 6,317 tons per day, or 37,902 tons per week, against 27,687 in the week ending Aug. 21. There have been no shipments at this rate before since the first week of April, and but one week of equal shipments since the roads ceased carrying at war rates.

For the week ending Sept. 9 the shipments billed at Chicago (not including those from points west billed through Chicago) were 30,057 tons, against 55,276 tons in the corresponding week of last year and 32,019 in the previous week of this year. With this exception the shipments last week were the largest since March. The earnings from them must have been about at the rate of $116 this year for every $100 last year. The decrease is about 50 per cent. in grain, 47 per cent. in flour and 29 per cent. in provisions.

THE OPENING OF THE MILWAUKEE & ST. PAUL LINE TO OMAHA is likely to exert considerable influence towards settling troubles in no way connected with Omaha business. With a line to Council Bluffs as short as those of the three roads in the present "Iowa Trunk Line Association," of course it will be able to command a share of the traffic divided now equally among the three roads in that Association. There has probably never been any disposition on the part of the Association to contest its right to a share of the business, and, as soon as it is able to do as good service as the other roads, to an equal share. But the St. Paul Company, being in position to spoil the Association business, will, it is said, require something more. Its heaviest traffic heretofore has been that between St. Paul (including Minneapolis) and Lake Michigan, which it divided with the Chicago & Northwestern, in order that rates might be maintained. When some two years ago the Rock Island secured an interest in the Burlington, Cedar Rapids & Northern, it made an arrangement with the Minneapolis & St. Louis, and established a new route between Chicago and Minneapolis—somewhat circuitous, it is true, but sufficiently efficient to secure a large amount of traffic when some reduction was made from the regular rates. This was touching the Milwaukee & St. Paul and also the Northwestern in a tender part, and the St. Paul was not then in condition to retaliate on the Rock Island. It can do so now, and, as its line much of the way across Iowa is but a few miles north of the Rock Island's, it can affect much of its local as well as its through business. It is therefore inclined to insist that its entrance into the Iowa pool shall be accompanied by an agreement of the Rock Island to enter the St. Paul-Minneapolis pool. The Northwestern also desires this, and probably, at this time, the Rock Island also. It has been a free lance long enough to test what it can do by making such rates as would secure traffic, has developed a considerable business, and become widely known as a Chicago-St. Paul route, carrying at times, we believe, more immigrants than any other road. This preliminary privateering, so to speak, the St. Paul did not need to practice, or not to anything like the same extent, in order to establish itself at Omaha, for it is not a circuitous line, like the Rock Island route to St. Paul, but one of shortest; moreover, it was sure of recognition from the first; whereas, if the Rock Island had asked for a goodly share of the St. Paul-Minneapolis business when it first went in there, it might have been snubbed.

Since writing the above it is reported that in negotiations for a division of the traffic the Rock Island demanded a full third of the St. Paul–Minneapolis business—an unreasonable claim, it would seem, considering that its route is 521 miles long, from Chicago, against 410 by the Northwestern, and 409 by the St. Paul. It is true that difference in distance does not make so great a difference in freight as in passenger business; but if an addition of 26 per cent. to distance makes *no* difference in ability to compete for traffic, then the Baltimore & Ohio, with a line from Chicago to New York 13 per cent. longer, ought to get an equal share of the Chicago–New York business, instead of 8 per cent. of the west-bound and next to none of the east-bound (its 8 per cent. out of Chicago nearly all goes to Baltimore); and the Chicago, Burlington & Quincy, with a line between Chicago and St. Louis 348 miles long, against the Chicago & Alton's 280 and the Wabash's 286, should have as large a share of the business as they, etc. Doubtless the Rock Island can get a third of the business by making some reduction in the rate; but what it is entitled to is not the share of the traffic at full rates which it is able to get by cutting rates, but as much traffic as will give it all the *profit* it can make by any kind of competition. No company can be asked to accept any division which will yield it less profit than it can make by free competition; but it may often be best for it to accept less traffic than it can obtain under such competition in order to get more profit.

A CHICAGO-ST. LOUIS POOL is to be formed, the parties to it being the Chicago & Alton, the Illinois Central, the Chicago, Burlington & Quincy and the Wabash. It was a misunderstanding as to what was agreed upon at a meeting where it was supposed that a pool had been established, just after the Wabash was opened into Chicago in the fall of 1880, that caused the great war of passenger rates between Chicago and St. Louis and between Chicago and the Mississippi River points. This war was closed but a few months ago, the great quantity of unlimited tickets outstanding having kept down passenger rates all the time, in spite of the disposition of all parties concerned to restore rates. The new movement, however, has regard to freight rates, the passenger rates having been settled, as mentioned, a few months ago. Freight rates were never quite so demoralized, but with four roads competing freely for the traffic, of course they could not be maintained. The traffic is not so important, perhaps, as might be expected between two such great cities—the New York and Philadelphia of the West; but it is too important to be made profitless, and moreover the rates on it affect a considerable local traffic.

So far only the preliminary steps toward a pool have been taken, and the apportionment of percentages has yet to be made: but with the realizing sense these roads have of the losses incurred in fighting for traffic, it is not probable that they will fail to agree upon terms when there is a chance to secure a durable peace.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:

Louisville & Nashville, annual meeting, at the office in Louisville, Ky., Oct. 4, at 11 A. M. Transfer books close Sept. 21.

Gulf, Colorado & Santa Fe, special meeting, at the office in Galveston, Tex., Oct. 30, to vote on the question of authorizing a new general mortgage and an issue of bonds at the rate of $12,000 per mile.

Railroad Conventions.

The *National Association of General Passenger & Ticket Agents* will hold its next semi-annual meeting at the Windsor Hotel, in Montreal, Sept. 19, beginning at 11 a. m.

The *Master Car-Painters' Association* will hold its annual convention in Chicago, beginning Sept. 20.

The *Master Car-Builders' Association* will meet in convention, pursuant to adjournment, on Oct. 10, at Niagara Falls.

The *American Society of Mechanical Engineers* will hold its stated annual meeting in New York, Nov. 2. Arrangements for the meeting will be announced hereafter.

Dividends.

Dividends have been declared as follows:

Missouri Pacific, 1¾ per cent., quarterly, payable Oct. 2. Transfer books close Sept. 16.

New York Central & Hudson River, 2 per cent., quarterly, payable Oct. 16. Transfer books close Sept. 15.

Pullman's Palace Car Co., 1½ per cent., extra dividend from the profits of the shops, payable Oct. 2. Transfer books close Sept. 16. This, with the regular quarterly dividends, makes 9½ per cent. for the year.

Manhattan Elevated, 1½ per cent., quarterly, on first and second-preferred stocks, payable Oct. 2.

Lehigh Valley, 2 per cent., quarterly, payable Oct. 16. This company increases its dividend from 1⅓ to 2 per cent.

Western Union Telegraph, 1½ per cent., quarterly, payable Oct. 16. Transfer books close Sept. 20.

Foreclosure Sales.

The *Ontario Southern* road was sold Sept. 4, under a decree of foreclosure granted by the New York Supreme Court, and bought by Sylvanus J. Macy, who owns or represents all the bonds. The property sold was the completed road from Sodus Bay, N. Y., to Stanley, 34 miles. The road was originally the Sodus Point & Southern, and was sold under foreclosure in 1875. The bonded debt was $994,300.

Brotherhood of Locomotive Firemen.

The ninth annual convention of the Brotherhood of Locomotive Firemen began its sessions in Terre Haute, Ind. Sept. 11. At the public exercises addresses of welcome to the delegates were made by Mayor Lynn, Gov. Porter and B. W. Hanna. At night a banquet was given with 700 persons present. Responses to toasts were made by Gov. Porter, Senator Voorhees and others.

Southern Railway & Steamship Association.

A dispatch from Atlanta, Ga., Sept. 13, says: "A meeting of the members of the Southern Railway & Steamship Association was held here to-day, and the rates on cotton to points north of Baltimore were reduced from 15 to 12 cents per 100 pounds. The Committee on Recasting the Divisions failed to agree, and the matter was left to the General Commissioner. The dissatisfied members will be allowed to appeal to the Board of Arbitration."

ELECTIONS AND APPOINTMENTS.

Boston, Hoosac Tunnel & Western.—The offices of Augustus Kountze, President, and George J. Forrest, Vice-President, are at No. 60 Equitable Building, Boston, Mass., where all communications should be addressed.

Chicago & Atlantic.—At the annual meeting at Huntington, Ind., Sept. 7, the following directors were chosen: I. S. Terry, Rochester, Ind.; George J. Bippus, J. W. Perviance, Huntington, Ind.; John F. McPherson, Lima, O.; Thomas Espy, T. T. Hunt, Kenton, O.; O. Childs, Samuel B. Smith, E. E. Willis, New York. The board elected Samuel B. Smith, President; T. P. Milligan, Secretary; O. W. Childs, Assistant Secretary; E. E. Willis, Treasurer; George J. Bippus, Assistant Treasurer.

Chicago, Milwaukee & St. Paul.—In the reorganization of the General Auditing Department, the following changes have been made:

"The Accounting Department of the passenger service, heretofore under charge of A. V. H. Carpenter, General Ticket and Passenger Agent, and the Statistic Department, heretofore in charge of W. B. Miller, have been transferred to the control of the General Auditor. The following appointments have been made: William N. D. Winne, Assistant General Auditor, with general charge of the department, under the direction of the General Auditor. P. Tyrrell, Ticket Auditor, to whom should be sent all reports of ticket sales by agents and foreign roads, reports of extra baggage, conductors' reports of fares collected, and all other reports pertaining to the passenger revenue, with all correspondence relating thereto. W. F. Dudley, Freight Auditor, to whom should be sent all reports of freight forwarded and received, balance-sheets, abstracts of commodities, and all other reports pertaining to the freight revenue, with all correspondence relating thereto. John A. Whaling, Auditor of Expenditures, to whom should be sent all pay-rolls and vouchers, and reports of material and labor expended, with all correspondence relating thereto."

Cleveland & Marietta.—Mr. D. G. Matthews has been appointed General Passenger Agent, with office at Marietta, Ohio.

Connecticut & Passumpsic Rivers.—At the annual meeting in Newport, Vt., Sept. 6, the following directors were elected: Emmons Raymond, W. R. Blodgett, Amos Barnes, Alden Speare, Stephen Foster, F. A. Peters, S. S. Thompson, Charles W. Pierce and T. P. Redfield. The directors chose Emmons Raymond President; W. R. Blodgett, Vice-President; H. E. Folsom, Superintendent.

East Tennessee, Virginia & Georgia.—Mr. A. Pope has been appointed General Passenger and Ticket Agent of this company, to take effect as of date Sept. 15, 1882. Mr. Pope's address will be Lnchburg, Virginia.

Florida Transit.—Mr. R. V. Dahoney is appointed Master of Machinery, vice J. N. Webster, resigned. All communications pertaining to the Locomotive and Car departments of the road should be addressed to him at Fernandina, Florida.

Greenville & Laurens.—At the annual meeting at Cannon Store, S. C., Sept. 5, the following were chosen: President, W. L. Mauldin; directors, T. Q. Donaldson, S. S. Crittenden, T. C. Gower, Geo. W. Sullivan, J. R. Harrison, W. C. Cleveland, Jno. A. Barksdale, Albert Dial, J. W. Ferguson, A. C. Fuller, M. S. Bailey, J. O. C. Flemming.

Hannibal & St. Joseph.—The board has elected F. L. Ames, Sidney Dillon, Jay Gould and Russell Sage directors in place of John Bloodgood, John R. Duff, A. G. Gorham and Horace Porter, resigned.

Hartford & Connecticut Valley.—The old directors having resigned, the following new directors were chosen Sept. 12: R. D. Hubbard, C. M. Pond, Henry C. Robinson, Hartford, Conn.; Samuel Babcock, Middletown, Conn.; D. C. Spencer, Saybrook, Conn.; E. H. Trowbridge, George H. Watrous, New Haven, Conn.; Wm. D. Bishop, Nathaniel Wheeler, Bridgeport, Conn. Messrs. Babcock, Hubbard and Spencer were in the old board; the others are all directors of the New York, New Haven & Hartford Company.

Louisville, Cincinnati & Lexington.—At the annual meeting in Louisville, Sept. 5, the old board was re-elected, and subsequently chose M. H. Smith President; T. S. Eastword, Vice-President. The board is controlled and worked by the Louisville & Nashville Company.

Massachusetts Central.—Mr. F. S. Anable has been appointed Auditor of this company, to take effect Sept. 1.

Massawippi Valley.—At the annual meeting last week the following directors were chosen: E. Raymond, R. N. Hall, W. K. Blodgett, S. Foster, F. A. Peters, W. White, C. W. Pierce, W. S. Foster, C. H. Nathan. The board elected R. N. Hall, President; S. Foster, Vice-President; W. S. Foster, Secretary and Treasurer. The road is leased to the Passumpsic Company.

Mexican Central.—Mr. D. B. Robinson is appointed General Superintendent in place of George T. Anthony. His office is at El Paso del Norte, Mexico. Mr. Robinson was recently General Manager of the Sonora road.

Mexican National.—Mr. R. C. Peebles has been appointed Superintendent of the El Salto, Toluca and Maravatio divisions of the Mexican National Construction Company's railway lines, and will have general charge of the operation and maintenance of the completed road. The chiefs of the Machinery and Telegraph departments will report directly to him.

Mr. J. C. Munro, Superintendent of the El Salto Division, having resigned that position, will continue as Master Mechanic in charge of shops and machinery.

Michigan, Indiana & St. Louis.—The officers of this new company are: President, John Lee, Crawfordsville, Ind.; Secretary, D. E. Thomas, Sturgis, Mich.; Treasurer, W. H. Bouslog, Winamac, Ind.

New York, Lake Erie & Western.—Mr. M. Gunn has been appointed Master Mechanic at Hornellsville, N. Y., in place of Mr. George H. Griggs, who has gone to the Rhode Island Locomotive Works. Mr. Gunn has been for a long time Foreman of the Salamanca shops.

New York & New England.—The following circular from the General Manager's office is dated Boston, Sept. 7: "Mr. C. C. F. Bent is hereby appointed Superintendent of the Eastern Division, which will include the Woonsocket Division, Providence and Southbridge extensions, Dedham, Ridge Hill and Rockville branches. Headquarters at Boston.

"Mr. T. W. Kennan will continue as Superintendent of Western Division, which will include Springfield Division and Melrose Branch. Headquarters at Hartford.

"The Eastern Division will include the station and yards at East Hartford, and the Agent and Yardmaster at Hartford will be under the instructions of the Superintendent of Eastern Division, as far as the work of that division is concerned. To take effect on the 9th inst."

Norfolk & Western.—Mr. A. Pope has been appointed General Passenger and Ticket Agent of this company, to take effect as of date Sept. 1, 1882. Mr. Pope's address will be Lynchburg, Virginia.

Pennsylvania.—At a meeting of the board in Philadelphia, Sept. 13, the following appointments and changes were ratified: Second Vice-President Edmund Smith to be First Vice-President in place of A. J. Cassatt, resigned, Mr. Smith, however, retaining his former duties. The duties heretofore performed by Mr. Cassatt will be assumed by Mr. Frank Thomson (late General Manager), who is made Second Vice-President. Mr. J. N. DuBarry is made Third Vice-President, and Mr. John P. Green, Fourth Vice-President, two new offices; both gentlemen have heretofore been As-

sistants to the President. Mr. Theodore N. Ely, General Superintendent of Motive Power, has his jurisdiction extended over all the lines east of Pittsburgh and Erie.

Other consequent changes are as follows: Charles E. Pugh is made General Manager in place of Mr. Thomson; Sutherland M. Prevost, General Superintendent Pennsylvania Railroad Division, in place of Mr. Pugh; W. J. Latta, Superintendent Philadelphia Division, in place of Mr. Prevost; James Reed, Superintendent Altoona Division, in place of Mr. Latta.

No appointment of General Freight Agent to succeed Mr. McCreighton was made.

Pullman's Palace Car Co.—At the annual meeting in Chicago, Sept. 7, the following were chosen: George M. Pullman, Charles G. Hammond, John Crerar, Marshall Field, J. W. Doane, Norman Williams and Henry C. Hulbert.

The officers of the company for the ensuing year are as follows: George M. Pullman, President and General Manager: Horace Porter, Vice-President; A. Weinsheimer, Secretary; A. B. Pullman, Second Vice-President; L. M. Johnson, Assistant to the President; George F. Brown, General Superintendent; C. H. Davie, Auditor.

Shenandoah Valley.—Mr. A. Pope has been appointed General Passenger and Ticket Agent of this company, to take effect as of date Sept. 1, 1882. Mr. Pope's address will be Lynchburg, Virginia.

Sodus Bay & Southern.—The officers of this company, successor to the Ontario Southern, are as follows: President, Sylvanus J. Macy; Vice-President, J. W. Harriman; Treasurer and Superintendent, Silas B. Stuart; General Passenger and Ticket Agent and Auditor, Frank Young; Road-Master, Patrick Walsh.

Sonora.—Mr. W. R. Morley, Chief Engineer, is appointed General Manager also, in place of D. B. Robinson, who has gone to the Mexican Central road.

Terre Haute & Indianapolis.—The following circular from General Superintendent Joseph Hill is dated St. Louis, Sept. 11:

"Mr. G. H. Prescott is appointed Superintendent of Motive Power and Machinery, with office at Terre Haute, Ind., vice Mr. C. R. Peddle, assigned to other duties. Mr. C. R. Peddle is appointed Purchasing Agent, with office at Terre Haute, Ind. Appointments to take effect Sept. 14."

Texas-Mexican.—Mr. George A. Sanderson has been appointed General Freight and Passenger Agent, with office at Laredo, Texas.

Texas & Pacific.—At the annual meeting in New York, Sept. 12, the following directors were chosen: F. L. Ames, C. O. Baird, F. S. Bond, J. C. Brown, T. T. Eckert, George J. Gould, Jay Gould, R. S. Hayes, A. L. Hopkins, H. M. Hoxie, W. C. Hall, E. H. Perkins, Jr., Russell Sage, J. P. Scott, D. Tilsenheld, W. T. Walters, E. B. Wheelock. The board elected the following officers: President, Jay Gould; First Vice-President, R. S. Hayes; Second Vice-President, John C. Brown; Third Vice-President, H. M. Hoxie; Secretary and Treasurer, C. E. Satterlee.

Toledo, Cincinnati & St. Louis.—Mr. D. C. Bacon has been appointed Superintendent of the Southeastern Division in place of Mr. R. B. Jones, resigned.

Union Pacific.—The following changes and appointments are announced by Mr. I. H. Congdon, Superintendent of Motive Power and Car Department:

Mr. John McKenzie is appointed Assistant Superintendent of Motive Power and Cars, with office in Omaha, Neb. His jurisdiction extends over all the company's lines.

The Kansas Central line is placed under the jurisdiction of James McKenzie, Division Master Mechanic at Armstrong, Kan.

The Salt Lake & Western Line is placed under the jurisdiction of C. C. Quinn, Division Master Mechanic at Evanston, Wy. Ter.

The round-house at Wallace, Kan., will be under the jurisdiction of John B. Daily, Division Master Mechanic.

Mr. F. Mertsheimer, Division Master Mechanic of the Colorado Central lines, will also have jurisdiction over the Denver and Cheyenne divisions of the Kansas Pacific; the Greeley, Salt Lake & Pacific; Denver and Boulder Valley; Golden, Boulder & Caribou; Georgetown, Breckenridge & Leadville; Denver, Western & Pacific, and the Denver, South Park & Pacific lines, with all branches of the same with headquarters at Denver, Colorado.

Mr. R. McDougal is appointed Assistant Division Master Mechanic, with headquarters at the Denver shops. Mr. James Kirk is appointed Assistant Division Master Mechanic, with headquarters at the Denver & South Park shops, Denver, Col.

On and after Sept. 1, 1882, division master mechanics assume charge of the affairs of the Car Department on their respective divisions, and will be respected and obeyed accordingly. The present foreman of the Car Department at the several points will retain immediate charge of the affairs of that department under the supervision of the division master mechanics respectively.

Virginia, Tennessee & Georgia Air Line.—Mr. A. Pope is appointed General Passenger and Ticket Agent of the Virginia, Tennessee & Georgia Air Line, to take effect as of date Sept. 1, 1882. Mr. Pope's address will be Lynchburg, Virginia.

Wheeling & Lake Erie.—The following circular from C. Robinson Griggs, Lessee and Manager, is dated Toledo, O., Sept. 1: "C. A. Wilson is hereby appointed Chief Engineer of the Wheeling & Lake Erie Railroad, with headquarters at Toledo, O. He will have direct personal charge of construction, structures and superstructures, and all matters appertaining to the Engineering Department. The Road Department, while under the immediate charge of the Road-Master, will be under the supervision of the Chief Engineer, and his orders and directions in regard thereto will be observed accordingly."

PERSONAL.

—Mr. George T. Anthony, for some time past General Superintendent of the Mexican Central road, has resigned his position.

—Mr. F. R. Myers, formerly General Passenger Agent of the Pennsylvania Company, has returned from a long trip in Europe very much improved in health. He is at present in New York.

—Mr. R. B. Jones, Superintendent of the Dayton & Southeastern Division of the Toledo, Cincinnati & St. Louis road, has resigned his position. His resignation has been accepted.

—Messrs. Thomas C. Gray, of Concord; Alden B. Smith, of Derry, and Henry A. Emerson, of Henniker, are the candidates of the New Hampshire Democrats for Railroad Commissioners.

—The New Hampshire Republicans have nominated as their candidates for Railroad Commissioners Edward J. Tenney, of Claremont, Benjamin W. Hoyt, of Epping, and Stillman Humphrey, of Concord.

—Mr. Frank Shanly, a well-known Canadian engineer, died suddenly on a Canadian Pacific train Sept. 13, while on his way to Brockville. Mr. Shanly was one of the firm of Shanly Brothers, who completed the Hoosac Tunnel.

—Mr. J. McC. Creighton has resigned his position as General Freight Agent of the Pennsylvania Railroad. He has been in the service of the company a number of years as division superintendent and in the freight department.

—Mr. George H. Griggs, for some time past Master Mechanic in charge of the Hornellsville shops of the New York, Lake Erie & Western road, has resigned that position to go to the Rhode Island Locomotive Works at Providence as Master Mechanic.

—Mr. C. F. Cox, late Assistant Secretary and Treasurer of the Canada Southern Company, and Mr. M. H. Taylor, also connected with the Canada Southern, have gone into the banking and stock-brokerage business in New York, the firm being Taylor, Carolin & Cox.

—Mr. Edward L. Sanford died at his residence, Sharon Hill, near Philadelphia, Sept. 8, aged 66 years. The cause of his death was paralysis. He had been connected with the Adams Express Company for 40 years, and for 20 years was Vice President of the company. He was also a director of the Western Union Telegraph Company.

—Mr. P. L. Innes, for some time past Principal Assistant to D. C. Linsley, Contractor and General Manager of the Canada-Atlantic road, resigned his position, on Aug. 20, to become a partner with Messrs. Cook and Jones, contractors for the Toronto harbor and island improvements for the Dominion government. The firm is now Cook, Jones & Inness.

—Dr. Norvin Green has announced his intention of retiring from the presidency of the Western Union Telegraph Company at the annual meeting in October. He has been President of the Western Union for five years, and was previously President of the Louisville, Cincinnati & Lexington company. Dr. Green will return to Louisville, his former home.

—On Sunday, Sept. 3, there died in New York an old railroad employé, whose long and faithful service in a position which, though humble, involved great trust, deserves record. This was John Neely, bank messenger of the New York Central & Hudson River Railroad. In the early days of the Hudson River Railroad, Neely was employed as butler in the family of the late Mr. James Boorman, one of the principal projectors of that road. Mr. Boorman, having great confidence in his honesty, placed him in the office of the railroad company, which was then in Chambers street, in 1850. He continued in the same position after the consolidation with the New York Central, and till his death, making 32 years of continuous service, during which he carried to the banks in deposits over *six hundred millions of dollars*, without the loss of a cent. Mr. Neely was a native of the North of Ireland, and was 63 years old at the time of his death. He was an active member of the Methodist Church, and a devout Christian, as well as a man of the strictest integrity. He was familiarly known to all the prominent brokers and bank officers of the city, and commanded their implicit trust. No man in the service of any railroad, in any position, high or low, ever rendered more faithful service.

TRAFFIC AND EARNINGS.

Grain Movement.

For the week ending Sept. 2 receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past seven years:

Year.	—Northwestern shipments.— Northwestern receipts.	Total.	By rail.	P. c. by rail.	Atlantic receipts.
1876....	4,240,764	4,192,884	1,808,411	43.1	3,612,266
1877 ..	5,015,253	4,598,604	993,998	21.6	4,745,601
1878....	8,462,587	6,605,490	1,316.419	19.9	6,846,950
1879....	7,759,569	5,137,970	1,445,917	25.1	7,521,212
1880....	6,677,269	6,323,361	2,132,330	33.7	6,337,127
1881....	8,520,758	5,104,559	2,517 395	49.3	5,431,682
1882...	8,060.419	5,393,641	2,745,645	50.9	6,810,121

—The receipts of the Northwestern markets were larger this year than in the corresponding week of any previous year except last year and 1878; they were also a fourth larger than the previous week of this year, and were the largest since the week ending Sept. 10 last year, and were exceeded in but three weeks of last year, in ten weeks of 1880, in one week of 1879, in four weeks of 1878, and never previously. They may, therefore, properly be called very large receipts, and are probably only the beginning of very large receipts when the spring wheat begins to come forward.

The large increase over the previous week is chiefly in wheat and corn. The shipments of these markets were also exceeded in the corresponding week only in two years—1880 and 1878. There were 241,000 bushels more than in the previous week of this year, and are the largest since Sept. 10 last year. The increase in shipments is chiefly in oats. The rail shipments are as they were the week before, more than half of the whole, and larger than in the corresponding week of any previous year. The earnings from these shipments must have been about at the rate of $218 this year for every $100 last year and every $203 in 1880. The shipments down the Mississippi were 190,117 bushels, or 3.5 per cent. of the whole, and they were the smallest since the middle of July.

The Atlantic receipts have been exceeded in the corresponding weeks of 1878 and 1879, but they are this year 1,378,000 bushels (25 per cent.) more than last year, and exceed by nearly the same amount the receipts of the previous week of this year, and are larger than in any previous week since the first week of July, 1881; and, indeed, there were but three weeks in 1881 that they were exceeded; but in 1880 they were exceeded in no less than 19 weeks. Five-eighths of the Atlantic receipts are still wheat, but the increase over the previous week is nearly all oats and corn, and no less than 1,044,000 bushels of the increase (out of a total of 1,370,000) was oats.

Of the Northwestern receipts for the week Chicago had 55.5 per cent., St. Louis 17.7, Toledo 12.8, Peoria 7.7, Detroit 3.2, Milwaukee 2.5, Cleveland 0.7, and Duluth 0.4 per cent. Of the total increase of 1,586,000 bushels over the previous week, 1,396,000 bushels were at Chicago, and there was a decrease at St. Louis, which has not had so small a proportion of the whole before since June. But the Chicago receipts were nearly three-fourths corn and oats, while the St. Louis receipts were two-thirds wheat. Chicago, however, received a third more wheat than St. Louis and a half more than Toledo, and the indications are that the more northern parts of the winter wheat district and the extreme southern part of the spring wheat district (especially Nebraska) are beginning to market their grain, which naturally finds its way by Chicago.

Of the Atlantic receipts, New York had 51.2 per cent., Baltimore 19.3, Philadelphia 14.6, New Orleans 5.4, Montreal 5.2, Boston 4.1, and Portland 0.2 per cent. of the increase of 1,372,000 bushels over the previous week 859,000 was at New York and 228,000 at Philadelphia. Baltimore's receipts were a smaller proportion of the whole than before since the middle of July; the Philadelphia receipts a larger proportion of the whole than before since April, and a larger *quantity* than before since June 4, 1881. There were but two weeks in 1881 in which these Philadelphia receipts were exceeded; but there were 18 in 1880. These large receipts at Philadelphia are also an indication that the grain shipments are from more northern territory.

Of Baltimore receipts 95 per cent. were wheat, while nearly half of New York's and more than half of Philadelphia's were other grain.

Of the exports of this week ending Sept. 4 Baltimore had 39.5 per cent., New York had 37.1, Philadelphia 9.2, Montreal 9, New Orleans 3, and Boston 2.2 per cent. Only 2½ per cent of the exports were grain other than wheat.

For the week ending Sept. 6 the exports were 4,053,366 bushels of grain and 100,023 bushels of flour this year, against 2,843,132 bushels and 88,844 barrels last year, and 6,234,512 bushels and 84,113 barrels in 1880.

For the week ending Sept. 9 receipts and shipments at Chicago and Milwaukee were:

	—Receipts.— 1882.	1881.	—Shipments.— 1882.	1881.
Chicago.....	3,203,819	4,011,080	3,004,410	2,577,256
Milwaukee.....	224,917	401,201	142,784	450,615
Both	3,428,736	4,413,181	3,147,194	3,027,871

The receipts were thus 985,000 bushels less, but the shipments 120,000 more than last ye ar.

For this week ending Sept. 9 receipts and shipments at Buffalo were:

	—Receipts.— 1882.	1881.	—Shipments.— 1882.	1881.
By rail.....	1,054,500	2,872,600	1,371,000	1,710,500
By water.....	1,770,600	2,075,110	1,457,900	1,093,500
Total.....	2,825,100	4,947,710	2,828,900	2,804,000

There was a decrease of 1,818,000 bushels in the rail and of 370,000 bushels in the lake receipts; and a decrease of 329,500 in rail shipments, but an increase of 364,400 in the canal shipments.

For the week ending Sept. 2 receipts at four Eastern ports have been for three years:

Bushels:	New York.	Boston.	Phila.	Baltimore.	Total.
1882. ..	2,728,578	519,625	553,900	755,247	4,557,350
1881.....	3,302,257	501,503	766,600	974,552	5,544,912
1880	3,471,040	67[illegible],300	675,500	[illegible]3,182	5,813,022
P. c. of total:					
1882. ...	59.9	11.4	12.1	16.6	100.0
1881 .. .	59.5	9.0	14.0	17.5	100.0
1880.....	59.7	11.7	11.6	17.0	100.0

Philadelphia and Baltimore together had 28.7 per cent. of the whole this year, against 31.5 per cent. last year and 28.6 in 1880. This year 1,054,800 bushels (38.7 per cent.) of the New York receipts were by canal, against 1,315,200 bushels (40 per cent.) last year and 2,412,500 bushels (69.5 per cent.) in 1880.

Delaware Peach Traffic.

Up to Sept. 8 there had been carried over the Delaware Division of the Philadelphia, Wilmington & Baltimore road 4,495 car-loads of peaches. The shipments are now over 200 car-loads a day. This does not include the shipments over the Junction & Breakwater road and by steamer from Lewes, nor the steamboat shipments from Eastern Shore landings to Baltimore.

Coal Movement.

Anthracite tonnages for the eight months ending Sept. 2 are reported as follows, the tonnage in each case being only that originating on the line to which it is credited:

	1882.	1881.	Inc. or Dec.	P. c.
Phila. & Reading	4,324,429	4,428,827	D. 104,398	2.4
Northern Cent., Shamokin Div., and Summit Br. R. R.....	815,696	681,800	I. 133,896	19.6
Sunbury, Hazleton & Wilkesbarre	41,996	7,876	I. 34,120	431.9
Pennsylvania Canal...	291,116	277,975	I. 13,141	4.7
Central of N. J., Lehigh Div..... .	2,950,125	2,928,615	I. 30,510	1.0
Lehigh Valley.....	3,789,036	3,621,804	I. 167,232	4.6
Pennsylvania & N. Y.	128,778	62,354	I. 66,424	106.4
Del., Lacka. & West ..	2,930,636	2,764,186	I. 166,450	6.0
Del. & Hudson Canal Co.....	2,235,321	2,333,341	D. 98,020	4.2
Pennsylvania Coal Co.	886,623	879,857	I. 6,766	0.4
State Line & Sullivan.	37,694	42,226	D. 4,532	10.7
Total anthracite....18,140,500		18,028,921	I. 411,579	2.3

The tonnage of anthracite for the corresponding period for six years has been:

1882.	18,440,500	1879....	16,972,754
1881.....	18,028,921	1878.....	10,737,415
1880.....	14,216,454	1877.....	12,831,629

Anthracite trade is more active and prices are better though there is hardly a pretence of selling up to the September list. The demand for domestic sizes for winter use is active.

Anthracite tonnage passing over the Belvidere Division, Pennsylvania Railroad, for the eight months was as follows:

	1882.	1881.	Increase.	P. c.
Coal Port for shipment.....	58,748	41 339	17,409	42 4
S. Amboy for shipment.....	499,584	441,273	58,11	13.2
Local points on N. J. lines...	470.810	461,354	9.456	2.0
Co.'s use on N. J. lines. . ..	84,421	73,620	10,801	14.6
Total.....	1,113,563	1,017,586	95,977	9.4

Of the total this year 911,261 tons were from the Lehigh Region, and 202,302 tons from the Wyoming Region.

Semi-bituminous tonnages reported for the eight months are as follows:

	1882.	1881.	Inc. or Dec.	P. c.
Cumberland, all lines.....	673,009	1,365,331	D. 692,322	50.7
Huntingdon & Bd. Top.....	186,244	141,791	I. 44,453	31.3
East Broad Top.....	60,455	53,019	I. 7,436	14.0
Tyrone & Clearfield.....	1,888.509	1,610,666	I. 277,843	17.2
Bellefonte & Snow Shoe	148,240	70,286	I. 77,954	110.9
Total semi-bituminous...2,956,457		3,241,093	D. 284,636	8.8

The marked change in semi-bituminous is the great decrease in Cumberland, caused by the long strike.

Shipments of Cumberland coal away from the region for the eight months were as follows:

Balt. & Ohio R. R.....	539,250
Bedford Div., Pa. R. R.....	86,163
Ches. & Ohio Canal	43,686
Total.....	669,108

Of the shipments from the mines 439,279 tons were over the Cumberland & Pennsylvania road; 52,042 tons over the George's Creek & Cumberland road, and 162,621 tons over the West Virginia Central & Pittsburgh.

Actual tonnage passing over the Huntingdon & Broad Top Mountain road for the eight months was as follows:

	1882.	1881.	Inc. or Dec.	P. c.
Broad Top coal.....	186 244	141,791	I. 44,453	31.3
Cumberland coal.....	93,105	203,953	D. 110,848	54.4
Total..... ..	279,349	345,744	D. 66,395	19.2

The Broad Top coal is mined on the line; the Cumberland carried through for the Pennsylvania Railroad.

Bituminous tonnages reported for the eight months were as follows:

	1882.	1881.	Inc. or Dec.	P.c.
Barclay R. R. & C. Co..	269 726	320,198	D. 50,472	15.7
Alleg. Region, Pa. R. R..	362,268	180,499	I. 181,769	100.7
Penn and Westmoreland	848,226	602,391	I. 245,835	40.8
West Penna. R. R.....	228,819	203,504	I. 25,315	12.4
Southwest Pa. R. R.....	60,138	18,205	I. 41,933	230.4
Pitts. Region, Pa. R. R..	436,241	434,193	I. 2,048	0.5
Total bituminous.....	2,205,418	1,758,990	I. 446,428	25.4

Bituminous tonnages generally show a very considerable increase.

The coal tonnages of the Pennsylvania Railroad for the seven months were as follows:

	1882.	1881.	Increase.	P.c.
Anthracite.....	1,138,597	903,784	234,813	26.0
Semi-bituminous.....	2,321,711	2,003,745	317,966	15.8
Bituminous.....	1,935,731	1,438,792	496,939	34.6
Coke.....	1,925,699	1,642,870	282,829	17.2
Total.....	7,321,738	5,989,191	1,332,547	22.3

The tonnage this year for August (five weeks) was 1,078,066 tons.

Coke tonnages reported for the seven months are as follows:

	1882.	1881.	Inc. or Dec.	P. c.
Snow Shoe.....	14,965	6,579	I. 8,386	127.1
Allegheny Region, Pa. R.R.	74,732	66,467	I. 8,255	12.5
Penn. & Westmoreland....	170,716	134,810	I. 35,906	26.6
West Penna. R. R.....	77,476	80,245	D. 2,769	3.4
Southwest Penna. R. R....1,187,591		948,462	I. 239,129	25.2
Pittsburgh Region, Pa.R.R.	400,229	406,307	D. 6,077	1.5
Total coke.....1,925,699		1,642,870	I. 282,829	17.2

These tonnages are all over the Pennsylvania Railroad and branches.

Cumberland coal shipments for the week ending Sept. 9 were 49,468 tons. During the week the Cumberland & Pennsylvania road carried from the mines 37,134 tons; the George's Creek & Cumberland road, 8,118 tons; the West Virginia Central & Pittsburgh, 7,026 tons, a total of 52,278 tons, or 2,810 tons more than the shipments from Cumberland.

Chicago coal receipts for the four months from May 1 to Aug. 31 were:

	Anthracite.	Bituminous.	Total.
By rail.....	166,719	692,733	859,452
By lake.....	382,633	104,532	487,165
Total..	549,352	797,265	1,346,617
Total, same time, 1881.....	452,093	861,924	1,314,017

The increase in anthracite was both in lake and rail receipts. The decrease in bituminous was chiefly in lake receipts.

Railroad Earnings.

Earnings for various periods are reported as follows:

	1882.	1881.	Inc. or Dec.	P. c.
Eight months ending Aug. 31:				
At., Top. & S. F..	$9,109,663	$7,403,479	I. $1,706,184	23.4
Central Pacific....	16,412,866	14,877,789	I. 1,535,077	10.4
Central Iowa... .	735,308	578,104	I. 157,204	27.2
Ches. & Ohio.....	2,087,080	1,784,077	I. 303,003	17.0
Chi. & Eastern Ill.	1,132,876	1,042,093	I. 90,783	8.7
Chi. & Gd. Trunk.	1,339,783	960,226	I. 379,557	39.5
Cb., St. P., Minn. & O.....	2,983.033	2,444,026	I. 539,607	22.0
Cleve., Ak. & Col.	317,604	269,516	I. 48,088	17.8
Grand Trunk.....	10,600,040	10,612,015	D. 11,975	0.1
Hann. & St. Jo....	1,340,010	1,420,272	D. 80,262	5.6
Ill. Cen., Ill. lines.	4,491,647	4,285,729	I. 205,918	4.8
Iowa lines.....	1,182,959	1,155,890	I. 27,069	2.3
Metrop. Elevated.	1,850,764	1,624,023	I. 226,741	14.0
Mobile & Ohio....	1,164,568	1,414,236	D. 249,668	17.6
N. Y. Elevated...	2,139,658	1,919,492	I. 220,166	11.5
N. Y. & N. Eng..	2,202.295	1,708,342	I. 433,953	24.6
Northern Pacific..	4,065,933	2,126,579	I. 1,939,354	91.2
Or. Ry. & Nav....	3,156,600	2,637,067	I. 519,533	19.7
Net earnings....	1,489,670	1,243,498	I. 246,172	19.8
St. L., A. & T. H. Main Line..	852,024	960,681	D. 108,657	11.3
Belleville Line..	543,431	478,518	I. 64,913	13.6
St. P. & Duluth...	620,715	440,016	I. 180,698	41.1
Scioto Valley....	338,975	257,322	I. 81,653	31.4
Tol. Cin. & St. L.	599,175	420,332	I. 178,843	42.6
Wisconsin Cent...	1,103,304	825,482	I. 277,822	33.7
Seven months ending July 31:				
Ches. & Ohio.....	$1,715,905	$1,521,219	I. $194,687	12 8
Net earnings....	442,431	188,001	I. 254,430	135.3
Des. M. & Ft. D...	195,626	191,952	I. 3,674	1.9
Net earnings....	58,762	.....	.....	.....
Eliz., Lex. & B. Sdy.	251,137	.....	.....	.....
Net earnings	73,596	.....	.....	.....
Eur. & N. Amer...	306,936	263,055	I. 43,881	16.7
Louisv. & Nash...	7,160,899	6,294,651	I. 866,248	13.7
Net earnings	2,670,341	2,253,085	I. 417,156	18.5
Lake S. & Mich. S.	9,338,930	10,343,453	D. 1,604,523	15.5
Michigan Central..	4,858,863	4,994,610	D. 135,857	2.7
Utah Central.....	890,129	.....	.....	.....
Net earnings....	530,758	.....	.....	.....
West Jersey.....	579,656	512,397	I. 67,259	13.1
Net earnings....	255,801	206,224	I. 49,577	24.1
Month of July:				
Connotton Vy. ...	$24,840	.....	.....	.....
Eur. & N. Amer...	47,023	38,809	I. 8,214	21.1
Lake S. & Mich. S.	1,385,000	1,388,527	D. 3,527	0.3
Marq., Ho. & Ont.	195,639	155,683	I. 39,956	25.6
Net earnings....	86,818	56,147	I. 24,671	44.1
Michigan Central..	699,935	702,172	D. 2,237	0.3
Month of August:				
Atch., Top. & S.F..	$1,221,945	$1,000,640	I. $221,305	22.0
Central Pacific....	2,227,000	2,088,519	I. 138,481	6.6
Central Iowa... .	97,550	98,936	D. 1,386	1.4
Ches. & Ohio.....	371,185	262,858	I. 108,317	41.2
Chi. & Eastern Ill.	167,627	156,497	I. 11,130	7.1
Chi. & Gr. Trunk.	158,784	125,769	I. 33,015	26.1
Chi., St. P., M. & O.	394,555	376,897	I. 17,658	4.7
Cleve., Ak. & Col.	42,687	36,394	I. 6,293	17.4
Connotton Vy....	31,911	.....	.....	.....
E. Tenn., Va. & Ga.	279,977	254,312	I. 25,665	10.1
Evansv. & T. H....	95,218	57,881	I. 37,337	64.8
G. B., Win. & St. P.	30,696	32,452	D. 1,756	5.4
Hann. & St. Jo....	258,628	240,240	I. 18,388	23.0
Ill. Cent., Ill. lines	669,839	672,036	D. 2,197	0.3
Iowa lines.....	143,761	196,371	D. 52,610	26.8
Lit. Rk. & Ft. Sm.	34,028	43,121	D. 9,093	21.0
Louis., N. A. & Chi.	141.000	97,750	I. 43,250	44.1
Metropolitan El..	190,377	196,526	D. 6,149	3.1
Mo. Pacific lines: Central Branch.	93,380	96,547	D. 3,157	3.3
Mo., Kan. & Tex.	625,423	514,185	I. 111,258	21.6
Mobile & Ohio....	140,443	160,789	D. 20,346	12.6
N. Y. Elevated...	267,422	230,265	I. 37,157	16.1
Ohio Southern.....	33,482	24,501	I. 8,981	36.9
Or. Ry. & Nav....	490,800	453,364	I. 37,436	8.0
Net earnings...	263,300	254,720	I. 8,580	3.4
St. L., A. & T. H. Main Line.....	149,457	125,592	I. 23,865	19.0
Belleville Line..	86,680	63,588	I. 23,092	36.2
St. P. & Duluth...	105,364	73,002	I. 30,362	41.6
Scioto Valley....	59,361	53,286	I. 6,075	11.4
Tol., Cin. & St. L.	89,368	78,627	I. 10,741	13.6
Wisconsin Central	95,940	85,790	I. 10,150	11.8
First week in September:				
Chi. & Eastern Ill..	$42,949	$40,130	I. $2,819	7.0
Chi. & Gr'd Trunk.	47,499	29,685	I. 17,814	59.0
Chi., Mil. & St. P..	410,000	374,666	I. 35,334	9.5
Chi. & Northwest..	500,765	509,191	D. 8,426	1.7
Denver & R. G....	126,071	138,092	D. 12,021	8.7
Louisv. & Nashv..	247,595	225,800	I. 21,795	9.6
Northern Pacific..	171,000	126,507	I. 44,493	35.2
Wab., St. L. & P..	438,301	340,605	I. 97,696	28.6

Grand Trunk earnings above include Great Western for the whole period.

The Lake Shore & Michigan Southern and the Michigan Central earnings given are not official; they are given as published unofficially, for what they are worth.

The Chicago-Minnesota Pool.

A dispatch from Chicago, Sept. 13, says: "At a somewhat informal but important meeting yesterday of the managers of the railroads leading to Minneapolis and to the Missouri River, the claim of the Rock Island Company to a considerable share of the Minneapolis business, by virtue of its new Albert Lea route to the Northwest, was not allowed. Mr. Cable, the General Manager, thereupon telegraphed to the Rock Island agents to cut rates on cattle to any figure necessary to secure that freight. Mr. Merrill, of the Milwaukee & St. Paul road, gave notice that he would not enter the Omaha pool until this matter was adjusted, consequently there seems to be some prospect of a determined railroad war between the great trunk lines leading west and north from Chicago. The proposition was made to the Rock Island Railroad Company by the Northwestern and Milwaukee & St. Paul companies to admit the Rock Island to the Minnesota pool on the basis of allowing them 15 per cent. of the Minneapolis business and 10 per cent. of the St. Paul business. Mr. Cable, in behalf of the Rock Island road, demanded 22 per cent. northward and 33⅓ southward.

"No definite action as to the pooling business to St. Paul, on the basis of admitting the Rock Island road, was taken to-day, except that it was agreed to maintain the rates and appoint a commissioner to arbitrate them."

New York Canal Traffic.

For the week ending Sept. 7, the Canal Auditor reports:

	1882.	1881.	Increase.	P.c.
Tons shipped.....	193,392	169,656	23,736	14.0
Miles cleared by boats.....	258,029	215,556	42,473	19.7
Tolls.....	$27,772	$18,597	$9,175	49.3

The very large increase, especially in tolls, is noticeable Last year at this time the canal was suffering at once from the lighter grain movement and the railroad war; but the gain this year is chiefly due to lumber.

The tons of principal articles shipped were:

	1882.	1881.	Inc. or Dec.	P.c.
Lumber.....	64,299	43,897	Inc. 20,402	46.5
Grain.....	40,960	30,652	" 10,317	33.6
Iron and iron ore.....	20,712	24,311	Dec. 3,599	14.8
Salt.....	3,875	4,405	" 530	12.0
Stone, lime and clay.....	13,271	10,859	Inc. 2,412	22.2
Coal.....	36,172	44,116	Dec. 7,954	18.0
Sugar, molasses and coffee.....	442	166	Inc. 276	166.3
Domestic woolens and cottons..	86	160	Dec. 74	46.2

The very large increase in lumber is noticeable. The grain shipments, though a third larger than last year, are still light. There is a large increase in shipments of molasses, but in the other merchandise, for which the railroads compete sharply with canals, and get most of it when rail rates are very low, as last year, there is a decrease this year.

THE SCRAP HEAP.

Locomotive Building.

The Pittsburgh Locomotive Works has recently shipped several consolidated freight engines to the Atchison, Topeka & Santa Fe road.

The Rhode Island Locomotive Works at Providence are shipping this week several passenger engines to the Chicago & Grand Trunk road, with 18 by 24 in. cylinders, and 6 ft. drivers. These engines weigh 100,000 lbs., 65,800 lbs. on drivers, and have straight-top boiler to carry 160 lbs. pressure; barrel 54 in. in diameter inside at smoke-box end. They have 200 tubes 12 ft. long. The fire-boxes are 6 ft. 6 in. long, and have no crown-bars, being stayed with radial stay-bolts. The outside shell is of ½-in. iron. The engines have the extended smoke-box, which is now coming into such general use. They are furnished with the Westinghouse automatic and driver brakes. The engine and tender trucks of these engines have Krupp wrought-iron wheels with steel tires, the tires being fastened with Mansell's patent clip. The engine truck wheels are 37 in. in diameter and the tender wheels 43 in. The engines have one No. 8 and one No. 9 Friedman non-lifting injector and have no pumps. The valves are the Richardson patent balance valve. The tenders will carry 3,600 gallons of water and eight tons of coal. The works are also building engines for the Chicago, Milwaukee & St. Paul, the St. Paul, Minneapolis & Manitoba, the Eastern, the Boston & Providence and other roads; they expect to ship 30 engines in September.

Car Notes.

The Jackson & Sharp Co. in Wilmington, Del., shipped last week to the Chicago, Milwaukee & St. Paul nine first-class passenger coaches, the inside finish of which is in hard woods—ash, oak and mahogany—and in Eastlake design. An equipment was recently completed for the Rochester & Ontario Belt road, and the company is now making a shipment of narrow-gauge rolling stock to Mexico.

The car shops at Seattle, Wash. Ter., are building a number of coal cars; also small mine cars and some heavy cars for a logging railroad.

The Chicago, Milwaukee & St. Paul Co. is building a car-wheel foundry near Milwaukee, which will have a capacity of 150 wheels a day.

Mr. George W. Morris, Chicago representative of the car-spring house of A. French & Co. and the French Spiral Spring Co., of Pittsburgh, has removed his office from Ashland Block to No. 246 Clark street in Chicago.

The Milton Car Works at Milton, Pa., have taken a contract to build 20 passenger cars, 100 box cars and 300 coal cars for the Pittsburgh, McKeesport & Youghiogheny road.

Bridge Notes.

The McKeesport Youghiogheny Bridge Co. has been organized to own and maintain a bridge over the Youghiogheny River at McKeesport, Pa., and will soon be ready to let contracts for the work.

The Louisville Bridge Co. is putting up an iron bridge of 125 ft. span at Shoal River, Fla., on the Pensacola & Atlantic road. It will be 1,400 ft. long.

The Keystone Bridge Co., at Pittsburgh, has the contract for the new bridge over the Ohio at Point Pleasant, W. Va., for the Ohio Central road.

The Patapsco Bridge & Iron Works of Wendell Bollman in Baltimore are building several bridges for the West Virginia Central & Pittsburgh road. They have also a good deal of roof and building work on hand.

Iron and Manufacturing Notes.

Bailey & Shoemaker have been running their two rolling mills in Douglas, Berks County, Pa., full double turn all summer.

Graff, Bennett & Co. are enlarging their iron works at Millvale, near Pittsburgh. The new buildings are of iron.

The Niles Tool Works at Hamilton, O., have recently added to the machine shop a new building 140 by 40 ft., and will soon begin an addition to the foundry. They now employ 300 men and have a large number of orders on hand.

The Rail Market.

Steel Rails.—The market is unusually dull. The only sales reported are a few small lots at about $47 per ton at mill. An improvement is looked for.

Iron Rails.—Quotations are unchanged at $45 to $46 per ton at mill, with very little new business reported.

Rail Fastenings.—Spikes are a little lower, $2.90 to $3 per 100 lbs., but the market is steady, and the prospects for higher rather than lower prices. Fish-plates are quoted at $2.65 to $2.70 per 100 lbs.; track-bolts, $3.75 to $4.25.

Old Rails.—Old iron rails are firmer, with increased demand and short supply. Sales of tees are reported at $27.25 to $28 per ton in Philadelphia, and double-heads are quoted at $25.50 to $30.

The Iron Strike.

A dispatch from Pittsburgh, Sept. 11, says: "The iron strike assumed an interesting phase in Pittsburgh on Saturday by the action of the blacksmith hammermen and bumpermen of Wilson, Walker & Co.'s mill, to the number of 125, refusing to quit work when ordered to do so by the Amalgamated Association. It was expected that they would come out on Saturday evening, but at a meeting held during the afternoon they declined to do so. It is believed that within a few days a large number of heaters, rollers and finishers will break from the association and return to work. F. J. McGrath, a prominent member, stated on Saturday that a movement was being made by the finishers, heaters and rollers, looking to the organization of a new association, which would be more conservative in spirit than the Amalgamated Association. There is evident dissatisfaction, and he predicted an early close of the strike. Several mills will probably start this week—Graff, Bennett & Co. certainly. They will resume operations in the steel department to-day, and in the other departments as early as possible."

Another dispatch from Pittsburgh, Sept. 13, says: "A meeting of the finishers was held here to-day to consider the strike. Two hundred delegates, representing thirty-five mills and 5,000 men were present. Neither muck-rollers nor puddlers were allowed at the meeting. After a discussion lasting four hours it was decided that the time had arrived to terminate the strike. The sentiment was nearly unanimous that if the puddlers did not agree to accept the old scale the finishers would withdraw from the Amalgamated Association and form a society of their own. President Jarrett to-night called a meeting of the puddlers for to-morrow, when the action of to-day's meeting will be considered. Mr. Jarrett states that if the puddlers agree to work for the old prices he will at once ask for a conference with the manufacturers. If they are not willing to accept $5.50 for boiling, he will then call a meeting of the district delegates and submit the matter to them. The opinion prevails that the puddlers will yield, as any other course would result in the withdrawal of the finishers from the association, and that would disrupt the order."

OLD AND NEW ROADS.

Baltimore & Ohio.—At the regular monthly meeting of the board of directors in Baltimore, Sept. 13, President Garrett stated that the earnings of the road for the month of August were $1,851,891.54—the largest revenue earned in any month in the history of the company. The large increase in power by the construction of 103 consolidation and other first-class locomotives, and of gondola, box, live-stock and other cars, with the enlargement of the capacity of the freight plant generally, and increased facilities of all descriptions upon the lines of the company, enabled it to perform the great work with ease and facility. The organization and capacity of the company are now such that an important increase beyond the present heavy traffic can be handled promptly and successfully. The striking contrast was presented of the comparative earnings of the company for the year preceding the civil war, namely $300,000 per month, and the result for August, showing that the traffic is six times that then transported. The passenger business has increased with exceptional rapidity, and a general increase of business has been realized notwithstanding the protracted strikes connected with the coal and iron interests in the regions adjacent to the company's lines. The business upon the Pittsburgh Division, with the suspension of many extensive manufactories, the supplies for which were obtained over this line, has shown as steady and large an increase

Boston, Hoosac Tunnel & Western.—The Supreme Court at General Term has refused the application made by this company to dismiss the suit brought by the Attorney General of New York to test the legality of the corporate existence of the company. The suit will now have to be tried.

Boston & New York Air Line.—A dispatch from New Haven, Conn., Sept. 13, says: "The only business transacted at the meeting of the stockholders of the Boston & New York Air Line Railroad Company in Middletown to-day was to adjourn to Oct. 18. The meeting was called to consider the proposed lease of the road to the New York, New Haven & Hartford Railroad Company for 99 years, the consideration being the payment of 4 per cent. annually on the preferred stock of the Air Line road. It was found this morning that no vote could be taken, as four injunctions were served upon Secretary T. L. Watson, of Bridgeport, the only officer of the Air Line Company residing in the state, last evening, enjoining the roads from ratifying the lease. One injunction is in the interest of William J. Hutchinson, a New York broker, who holds 1,300 shares of common Air Line stock, which, it is represented, is worth $26,000, and which would not be benefited by the lease. In his writ he represents that the New York, New Haven & Hartford and Air Line roads have conspired to lease the Air Line, to the injury of him and other holders of the common stock, by making no provision for them; that the holders of the preferred stock have elected directors, from the choice of whom the owners of common stock were debarred, and that the Air Line Road has a future full of profit if the lease is not consummated. The writ is returnable before Judge Shipman, of the United States Circuit Court, at Hartford, Sept. 19. One of the other injunctions is in behalf of the town of Middletown, which holds 1,120 shares of common stock; another is in behalf of the town of Portland, which holds 380 shares of the same stock; and the third is in the interest of Mrs. P. W. Turner, who holds $20,000 worth of coupons of first-mortgage bonds of the road. Middletown put $1,000,000 in the road and Portland about $400,000, and some of the holders of the common stock say that they will fight any leasing scheme to the last. The books of the company will remain closed until after the October meeting. There is about $3,000,000 of preferred stock, most of it being owned in New York, and about $815,000 of common stock. Directors of the road say that the latter has only a fictitious value. It was issued for the past-due interest on the bonds of the road when the original mortgage was foreclosed."

Canada-Atlantic.—A correspondent sends us the following note in relation to this road:

"The Canada-Atlantic Railway will be open for general business about Sept. 11 from Coteau Station to Ottawa, 80 miles. This road was commenced in March, 1881, by D. C. Linsley, contractor, and is in every respect a first-class road. Bridges are of steel of the Toronto Bridge Company's

make and all small openings are furnished with iron girders. This line will shorten the route from Ottawa to Montreal some 5 miles; no grades going west exceed 39 ft. to the mile, and going east 29 ft. to the mile: no curve over two degrees, and the tangents are from 3 miles to 23 miles in length.

The road when that portion on the south side of the St. Lawrence to Alburgh Springs is finished, will give Ottawa a direct connection with the Vermont Central road. The distance from Ottawa to Alburgh Springs is 130 miles."

Canada Junction.—This road is now completed from West Farnham, P. Q., southward to East Franklin, Vt., 26 miles, leaving about three miles to complete it to the junction with the St. Johnsbury & Lake Champlain road. East Franklin is about four miles from the Canada line. The road is to be leased by the Montreal, Portland & Boston and the St. Johnsbury & Lake Champlain companies jointly.

Central Pacific.—This company's Northern line is now completed to Corning, Cal., 13 miles beyond the late terminus at Orland, and 29 miles north of Willows. The grading is nearly finished to Tehama, seven miles further.

Chesapeake & Ohio.—Track is now all laid on the extension from Newport News, Va., to Old Point Comfort, about nine miles. The trains will soon run through to the new terminus.

Chicago & Northwestern.—A committee from Dubuque has been urging upon the officers of this road the importance of an extension from Freeport, Ill., west, and from Maquoketa, Ia., east to Dubuque. No definite answer was received.

Cleveland, Columbus, Cincinnati & Indianapolis.—We have received the following note from Mr. H. Sabine, Commissioner of Railroads and Telegraphs of Ohio: "The report of this company for the year ending June 30, 1882, in comparison with that of the previous year shows the following differences: The net debt has been reduced $2,594,278.20, while at the same time 11,842, or 14.4 per cent. more passengers have been carried, or the road has transported one person 5,035,774 miles or 12.5 per cent. further than last year. The rate has averaged one hundredth of one cent more than the previous year. During the year 227,504 tons, or 8.7 per cent. more freight has passed over the road, making the ton-mileage 7,189,562, or 1.6 per cent. more than last year. The rate received per ton per mile has decreased from 0.767 cent in 1881 to 0 633 in 1882. There has been a change in the relative proportions of the different kinds of freight hauled as the following shows: In 1881 coal made up 14.9 per cent. of total tonnage; in 1882, 16.6 per cent. Lumber, in 1881, 9.8 per cent.; in 1882, 12.1 per cent. Grain and flour in 1881, 29.4 per cent.; in 1882, 19.8 per cent. Merchandise in 1881, 20.5 per cent.; in 1882, 22.5 per cent. And stone, lime, etc., in 1881, 5.1 per cent., and in 1882, 7.7 per cent.

Coudersport & Port Allegheny.—This road is now completed to Coudersport, Pa., 16 miles eastward from the starting-point at Port Allegheny on the Buffalo, New York & Philadelphia road. Trains will probably begin to run next week.

Connotton Valley.—Work is progressing well on the Straitsville Division. Track is now laid to the Tuscawas Valley crossing at Justice, O., six miles southward from the late terminus at Navarre, and 18 miles from Canton.

Denver & Rio Grande.—On the Utah Extension the track is now laid to Montrose, Utah, on the Uncompahgre River, 352 miles from Denver, and 22 miles westward from Cimarron, the last point noted. Work is being pushed westward.

Des Moines & Ft. Dodge.—On the extension of this road the track is now laid to a point 38 miles north by west from Tara Junction, Ia., leaving about 10 miles to be laid to reach Ruthven, which is to be the terminus this year. The extension has reached already several valuable limestone quarries, from which much business is expected.

East Tennessee, Virginia & Georgia.—On this company's Cincinnati & Georgia line, track has been laid from Rome, Ga., southward 30 miles to Hill's Creek. A short gap remains between this point and the track laid from Atlanta northward. On this gap there is still some grading to be done.

European & North American.—At a meeting held in Bangor, Me., Sept. 9, the stockholders of this company voted unanimously to ratify the contract for the lease of the road to the Maine Central Company.

Ft. Wayne & Jackson.—The following circular has been issued to the stockholders of this company:

"An agreement has been made by the Board of Directors of the Fort Wayne & Jackson Railroad Company and the Lake Shore & Michigan Southern Railroad Company whereby said last-named company agrees to lease the Fort Wayne & Jackson Railroad in perpetuity, paying therefor an annual rental of 5½ per cent. upon the preferred capital stock of said company, and, in case the net earnings of said road shall in any year after five years from the date of said agreement exceed 8 per cent. upon the preferred capital stock, pay a further sum of 2 per cent. per annum upon the common capital stock of said company. Evidence of the agreement to pay such rental will be made by an indorsement of the same upon the stock certificates of the Fort Wayne & Jackson Railroad Company. The payments as aforesaid on the preferred stock will be made semi-annually at the office of the Farmer's Loan & Trust Company, No. 26 Exchange Place, New York. You will please signify your approval of the above-described agreement by executing the within assent and returning it at the earliest moment, in order that the same may be legally consummated."

The Ft. Wayne & Jackson road extends from Jackson, Mich., to Ft. Wayne, Ind., 100 miles. It was formerly the Ft. Wayne, Jackson & Saginaw, and passed to the present company through foreclosure in 1880. It has no bonded debt, the capital being $700,000 common and $2,000,000 preferred stock.

Ft. Worth & Denver City.—The track on this road is now laid to Wichita Falls, Tex., 126 miles northwest from Ft. Worth, and 32 miles beyond the late terminus at Henrietta. Work on the grading north of Wichita Falls is progressing.

Greenville & Laurens.—At the annual meeting of this company, recently, the President reported that no money had been expended except for surveys. Negotiations had been opened with the Augusta & Knoxville and the Columbia & Greenville companies, and it is expected that an arrangement for building the road will be completed shortly.

Hartford & Connecticut Valley.—A majority of the stock, which was in the hands of a few large holders, has already been transferred to the New York, New Haven & Hartford Company, and that company has assumed control, a new board of directors in its interest having been chosen.

Notice is given that all stockholders of record on Aug. 31 will have the option for 30 days of selling their stock to the New Haven Company at the agreed price of $125 per share.

Illinois Central.—This company's statement for August shows earnings on its lines as follows:

	1882.	1881.	Decrease.	P. c.
In Illinois	$669,839	$672,036	$2,197	0.3
In Iowa	143,761	196,371	52,610	26.8
Total	$813,600	$868,407	$54,807	6.3

During August, 1882, the land sales were 6,889.53 acres for $24,517.15, and the cash collected on land contracts was $22,199.64.

Kansas City, Springfield & Memphis.—Track on this road is now laid to Loveland, Mo., 44 miles southeast from Springfield, and track-laying is in progress beyond that point. The grading is nearly finished to Walnut Ridge, Ark., 160 miles from Springfield. This is the Kansas City, Ft. Scott & Gulf's extension.

Lehigh & Hudson River.—This road was formally opened for through business last week by an excursion from Greycourt, N. Y., to Belvidere, N. J., a number of railroad men and invited guests being on the train.

Maine Central.—At a meeting of the stockholders in Portland, Me., Sept. 13, the lease of the European & North American road was confirmed by a vote of 29,958 shares in favor to 1,514 against the lease.

Manhattan Elevated.—This company makes the following statement for the month of August:

	Western.	Fixed charges.	Surp. or def.
New York Elevated	$107,219	$50,965	S. $56,254
Metropolitan	48,406	65,629	D. 17,223
Total.	$155,625	$116,594	S. $39,031

The statement does not give the gross earnings of the lines.

Marquette, Houghton & Ontonagon.—Notice is given that in accordance with the provisions of the trust mortgage dated March 1, 1878, the following 6 per cent. bonds, secured by the said mortgage, have been drawn by lot, viz.: 11, 42, 55, 62, 123, 134, 197, 237, 238, 303, 414, 422, 483, 484, 517, 527, 573, 583, 585, 592, 612, 621, 622, 782, 783, 825, 827, 982, 990, 1085, 1087, 1090, 1091, 1125, 1283, 1286, 1324, 1328, 1334, 1335, 1344, 1395, 1396, 1515, 1549, 1662, 1747, 1750, 1755, 1809, 1838, 1845, 1854, 1868, 1909, 1941, 2023, 2031, 2042, 2082, 2105, 2151, 2154, 2157, 2162, 2174, 2384, 2349, 2401 and 2411. The principal and interest of the same will be paid on presentation of the said bonds at the office of the Farmers' Loan & Trust Company, No. 26 Exchange place, New York, on Sept. 15, 1882. Interest upon the said bonds will cease on that date.

Mexican National.—A note from this company, under date of Sept. 8, says:

"Last night the track of the Mexican National Railway reached 150 kilometres from the city of Mexico to the Pacific, by way of Toluca. This is the ninety-third mile-post out from the city of Mexico, and accepted track to this point entitles us at once to the subventions on all accepted road built up to date, under the main concession. Two hundred and seventy (270) miles are built to date under this concession, the subvention on which will amount to $2,911,460. Subventions will hereafter be earned and payable as each successive section of 25 kilometres (16¼ miles) is constructed and accepted."

Dispatches have been sent to Engineer Fuller, congratulating him on his success in completing the road to Monterey within the time promised.

Michigan, Indiana & St. Louis.—This company has been formed by the consolidation of the Sturgis & Indiana, of Michigan; the Michigan, Indiana & St. Louis, of Indiana, and the Illinois, Indiana & Michigan, of Illinois. The projected road is to run from Sturgis, Mich., southwest to Danville, Ill., 170 miles. A contract has been let to an organization known as the New York, New Jersey & Western Construction Company.

New York City & Northern.—The Central Trust Company of New York has brought a suit in the Supreme Court as trustees of the $4,000,000 consolidated mortgage given by this company, for its foreclosure. The complaint, which was filed last week, states that the mortgage referred to was made in May, 1880, for the purpose of paying off the mortgage given by the same company for $1,800,000 in May, 1878, and the mortgage for $1,500,000 made by the West Side & Yonkers Railroad Company, for which the New York City & Northern Railroad Company became responsible, under a lease to it of the former road for 99 years. The plaintiff states that there are still outstanding a few of the bonds secured by the $1,800,000 mortgage. The complaint sets up the judgment secured some months ago against the New York City & Northern Railroad, by Henry Villard, William H. Starbuck, and the New York Loan & Improvement Company, and the sequestration suits which followed, in which Arthur Leary was appointed receiver, which are still pending. It is asserted that the security of the bonds issued under the consolidated mortgage is not sufficient, and it is asked that in the foreclosure the mortgage shall be declared a paramount lien upon the property and franchises of the company, except as to the outstanding bonds of the $1,800,000 mortgage.

Owensboro & Nashville.—An extension has recently been completed from the old terminus at Central, Ky., south to Bevier, four miles. This makes the road 40 miles long from Owensboro south.

Pennsylvania.—This company has nearly completed two boats for the ferry between New York and Jersey City, which will be the largest and finest boats on the river. They will be named the "Baltimore" and the "Chicago."

The new branch from Frazer, Pa., to Phœnixville, by Conshohocken and Norristown is now all under contract.

Pensacola & Atlantic.—Track is now laid to Shoal River, Fla., 54 miles eastward from Pensacola. The Shoal River bridge is nearly completed, and track-laying will be resumed as soon as it is done.

Rochester & Pittsburgh.—The Rochester *Post-Express* says: "Work on the Southern Extension of this road, from Bradford to Dubois and to Pittsburgh, is progressing satisfactorily, and there is now every prospect that the road will be opened to Dubois by Dec. 1 next. The connection with the Erie road, six miles south of Bradford, is made. The steel will be delivered at Johnsonburg and Fall Creek in a few days, and tracklaying will commence at both of these points. Twelve miles of grading has been completed in the vicinity of Ridgeway. The road bed is ballasted with broken stone. The grading south of Dubois is going on finely. One drift into the Beech Tree mine has been worked to the extent of 750 feet, and the coal is of a superior quality. The following are the stations south from Bradford on the Punxsutawney Division: Custer City, Big Shanty, Crawford, Alton Summit, Ormsby Mill, Erie Viaduct, Kane Road, Five Mile Mill, Wilcox, Rolf, Philadelphia & Erie Crossing, Johnsonburg, Whistletown, Ridgeway, Little Toby Creek, Brockwayville, Rattlesnake Junction (to be changed to Beech Tree), Beech Tree Mines, Bell's Mines, Dubois and Punxsutawney. The distance from Buffalo to Dubois is 182 miles, and from Rochester 226.

"The right of way on the Ashford and Buffalo branch has been settled for, with the exception of two pieces between Hamburgh and Ashford. Quite a large amount of grading has already been done. The transportation of stone for the big bridge over the Cattaraugus Creek has commenced. The steel is arriving at Ashford, and construction trains will be put on the line in a few days. There is little doubt that the road will be completed by the first of November next. The following are the stations on the line between Buffalo and Ashford: New York, Chicago & St. Louis Junction, East Hamburg, West Falls, Golden, Glenroad, East Concord, Springville, Riceville, West Valley, Ashford Junction, and from that point to Bradford, Salamanca, Great Valley, Carrolton, Irvine Mills, Limestone, State Line, Babcock, Kendall and Tarport. On and after Sunday next all trains from this city will be run through to Bradford. New engine-houses are being erected at Perry and Salamanca, and work on the depots at Great Valley, Limestone and Tarport has commenced."

St. Paul & Duluth.—This company paid 10 per cent. on the preferred stock last November, and two cash dividends of 1¾ per cent. each in March and June last. The Philadelphia *Press* says: "It was expected that like cash dividends would follow in September and December, the income being ample, but it has been decided that under the plan of reorganization dividends can be declared legally only in January and June. The directors have therefore postponed the next dividend until January, when 3½ per cent. will probably be declared, the preferred stockholders being entitled to 7 per cent. per annum from all sources. The gross earnings will show a large increase this year."

Savannah & Charleston.—At Charleston, Aug. 31' Judge Aldrich granted the reference asked for in *ex parte* A. C. Kaufman and others. The substance of the order is as follows: "To inquire and report the value of the permanent property of the Savannah & Charleston Railroad Company in the state of Georgia, according to the rule laid down by the Supreme Court, and also the value of the property of the said company in this state: also to what liens by mortgage, judgment or otherwise, such permanent property as lies within that state is subject under the laws of that state, and the order of priority of such liens, if there shall be conflict concerning that priority; also, that in case it shall be made known to the referee that any persons in the state of Georgia claim in the proceeds of the sale of property a priority of liens under certain judgments in their name, in the courts of Georgia, the said referee shall fix a day, with day or days succeeding, to take the proofs and hear the parties, and he shall give the notice of the time and place when and where he will hold such reference; also, that the said referee shall inquire and report the value in money of the rights, franchises and privileges set forth and transferred by the mortgage of March 21, 1871, to secure the bonds of the Savannah & Charleston Railroad Company, and known as the 8 per cent. bonds; and lastly, that the said referee shall file his report thereon within 60 days after the date of this order, unless he shall report that further time should be allowed." The Charleston *News and Courier* says this is the most important point yet gained by the 8 per cent. bondholders.

Sodus Bay & Southern.—This company has been organized by the bondholders who bought the Ontario Southern road at foreclosure sale. The capital stock is $1,000,000, and the company will have no funded debt. The road extends from Sodus Point, N. Y., to Stanley, 34 miles.

Texas & Pacific.—This company assumed control of the New Orleans Pacific road from Cheneyville to New Orleans Sept. 11 the road being turned over by the contractors as of that date.

Texas & St. Louis.—Track on the Arkansas Division is now laid from Pine Bluff, Ark., southwest to Camden. The grading is nearly all done on the 55 miles from Camden west by south to the Red River crossing. Work is progressing steadily on the large bridges over the White, Arkansas and Red rivers.

Tioga.—An extension of this road, on which work has been in progress for some time, has recently been completed from Arnot, Pa., southwest to Morris. It is 12 miles long, and opens up some new coal lands.

Toledo, Cincinnati & St. Louis.—Track on this road is now laid to Stewardson, Ill., 29 miles southwest from the late terminus at Charleston. Tracklaying is in progress on the section of 30 miles from Stewardson to Ramsey. From Ramsey to East St. Louis, 70 miles, the work is well advanced.

Union Pacific.—The New York *Evening Post* of Sept. 13 says: "The details of the proposed new $8,000,000 5 per cent. 25-year mortgage loan of the Union Pacific are said to be that the loan is to be secured by collaterals of the following securities, now in the treasury of the company, viz.: $2,360,000 Colorado Central 7s, $2,350,000 Utah & Northern 7s, $1,550,000 Denver & South Park 6s, $1,160,000 Kansas Central 6s, $970,000 Utah Southern Extension 7s, and $410,000 Omaha & Republican Valley 7s; total, $8,800,000. These issues are variously due from 1908 to 1921. The New England Trust Company will be the trustee. It is proposed to provide a sinking fund out of the excess of interest paid on the underlying bonds over the amount to be payable on the collateral trust bonds, which is 1 per cent. as regards about $2,710,000 and 2 per cent. as regards about $6,090,000 of the old bonds. The sinking fund it is intended to invest in the purchase of collateral trust bonds if they can be obtained at 105 or less. If this cannot be done the sinking fund will be invested to the best advantage."

These bonds are to be used in the construction of new branch and lateral lines.

Washington & Western.—Work has been begun on the extension of this road from Round Hill, Va., west to Winchester. Surveys are to be made for the extension beyond Winchester.

Western Union Telegraph.—At a meeting of the Executive Committee in New York, Sept. 13, the following statement was submitted for the quarter ending Sept. 30, the September earnings being estimated:

Surplus, July 1	$1,664,240
Net earnings for the quarter	2,250,000
Total	$3,914,240
Interest and sinking fund	126,850
Balance	$3,787,390

It was resolved to declare the usual quarterly dividend of 1½ per cent., which will require $1,199,770, leaving a balance of $2,587,620 on hand.

Wisconsin Central.—Track on this company's new line to Milwaukee is now laid from Neenah, Wis., south to Oshkosh, 15 miles, and a train will soon be put on. From Oshkosh to Schleisingerville the grading is nearly finished and track-laying is progressing rapidly.